

# U.S. Billion-Dollar Weather & Climate Disasters 1980-2024



<https://www.ncei.noaa.gov/access/billions/>

The U.S. has sustained 378 weather and climate disasters since 1980 in which overall damages/costs reached or exceeded \$1 billion. Values in parentheses represent the 2024 Consumer Price Index cost adjusted value (if different than original value). The total cost of these 378 events exceeds \$2.690 trillion.

**Drought**    **Flooding**    **Freeze**    **Severe Storm**    **Tropical Cyclone**    **Wildfire**    **Winter Storm**

**2024** 2 Events    \$5.8B (\$5.9B)    6 Deaths

**Central and Southern Severe Weather** Severe Storm    \$4.1B    3 Deaths

March 2024: Damaging hail, tornadoes and high wind from severe storms impact many Central and Southern states. Kansas, Oklahoma and Missouri were affected by up to baseball-sized hail damaging homes, vehicles, businesses. Illinois, Indiana and Ohio were impacted by hail, high wind and dozens of tornadoes including a deadly EF-3 striking northwest Ohio.

**Southern Tornado Outbreak and East Coast Storm** Severe Storm    \$1.7B (\$1.8B)    3 Deaths

January 2024: Southern tornado outbreak and east coast storm impacted more than a dozen states. At least 39 preliminary tornadoes were clustered around the Florida Panhandle through the Carolinas while hundreds of high wind reports were scattered up the East Coast reflecting damage to homes, businesses, vehicles and other infrastructure. The strongest tornado was an EF-3 that caused significant damage around Panama City Beach, Florida, after an intense waterspout moved onshore.

**2023** 28 Events    \$91.3B (\$93.7B)    492 Deaths

**East Coast Storm and Flooding** Flooding    \$1.3B    5 Deaths

December 2023: Powerful east coast storm from Florida to Maine produced widespread impacts from heavy rainfall, flooding, high winds and coastal erosion. The heavy rainfall and snowmelt were amplified by record-high temperatures in the Northeast.

**Southern/Midwestern Drought and Heatwave** Drought    \$14.1B (\$14.6B)    247 Deaths

Spring-Fall 2023: Drought conditions impacted numerous Southern and Midwestern states (TX, LA, OK, KS, IL, MO, NE) and surrounding states. The agriculture sector has been impacted across these affected states including damage to field crops from lack of rainfall. Ranchers have also been forced to sell-off livestock early in some regions due to high feeding costs. For the second straight year, portions of the Mississippi River have experienced low water levels impacting river commerce. This low flow has also allowed salt water from the Gulf of Mexico to migrate northward, along the bottom of the Mississippi River, impacting water quality in southern Louisiana. Several Northwestern states including Washington, Oregon and Montana have also been impacted by increasing drought effects.

**Southern Hail Storms** Severe Storm    \$1.6B (\$1.7B)    0 Deaths

September 2023: Hail storms impact Texas, Oklahoma and Missouri. The most damaging impacts were in central Texas including Austin, Georgetown, Round Rock and Arlington on September 24. Towns north of Austin in particular were impacted by baseball sized hail causing damage to homes, vehicles and businesses.

**Hurricane Idalia** Tropical Cyclone    \$3.5B    5 Deaths

August 2023: Hurricane Idalia made landfall near Keaton Beach in the Big Bend region of Florida as a strong Category 3 hurricane with winds of 125 mph. Idalia was the strongest hurricane to hit the Big Bend region in more than 125 years. Storm surge was about 8 feet above ground at Cedar Key, which caused heavy damage to homes, businesses, vehicles and other infrastructure. Other Big Bend coastal communities were also inundated by storm surge. Idalia produced 5 to 10 inches of rainfall across the Big Bend region of Florida and southeastern portions of Georgia and the Carolinas. The relatively low population density of the Big Bend region helped to reduce the physical exposure and damage costs. Significant flooding was reported in downtown Charleston, SC and nearby Edisto Beach. There was also 2 to 4 feet of storm surge along the Carolina coastline, which was exacerbated by the full moon and high tide cycle.



<https://www.ncei.noaa.gov/access/billions/events.pdf>

<b>Minnesota Hail Storms</b>	<i>Severe Storm</i>	<i>\$1.8B</i>	<i>0 Deaths</i>
August 2023: Numerous hail storms caused extensive damage across south-central Minnesota. Golf ball to baseball-sized hail caused damage to the windows, siding and roofs of many homes, vehicles and businesses.			
<b>Hawaii Firestorm</b>	<i>Wildfire</i>	<i>\$5.5B (\$5.6B)</i>	<i>100 Deaths</i>
August 2023: Devastating wildfires destroyed the historic town of Lahaina on Maui Island of Hawaii. Winds were enhanced from the strength and position of a high-pressure system located northwest of Hawaii, which helped to exacerbate the wildfire as it spread on the island of Maui. Hurricane Dora was also positioned south of Hawaii. This was the deadliest wildfire in the U.S. in over a century. Thousands of homes, vehicles and businesses were destroyed.			
<b>Northeastern and Eastern Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.6B (\$1.7B)</i>	<i>4 Deaths</i>
August 2023: More than one thousand reports of high wind, severe hail or tornadoes across many Northeastern and Eastern states. August 7 was a prolific day of severe weather with damage reports from Georgia to New York. These storms caused impacts to many homes, vehicles, businesses, agriculture and other infrastructure.			
<b>North Central and Eastern Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.5B</i>	<i>2 Deaths</i>
July 2023: Severe storms caused damage across several North Central and Eastern states. The state most impacted were Nebraska, Missouri, Illinois, Indiana and Wisconsin. High wind, severe hail and tornadoes caused damage to many homes, vehicles, businesses and agriculture assets.			
<b>North Central and Southeastern Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.8B (\$1.9B)</i>	<i>1 Death</i>
July 2023: Severe storms caused damage across several North Central and Southeastern states. The states most impacted were Michigan, Wisconsin, Ohio, Tennessee and Georgia. Ping pong to golf ball-sized hail and high winds damaged many homes, vehicles, businesses and other infrastructure.			
<b>Northeastern Flooding and North Central Severe Weather</b>	<i>Flooding</i>	<i>\$2.2B</i>	<i>10 Deaths</i>
July 2023: Severe storms brought devastation and flooding to portions of the Northeast, as areas reported up to eight inches of rain within a 24-hour period. Montpelier, Vermont received a record-breaking 5.28 inches of rain, flooding the city and damaging thousands of homes and businesses. The wide scale flooding in Vermont was similar to the flood impacts from Hurricane Irene in 2011. Early estimates put the flood damage in West Point, New York at more than \$100 (\$102.0) million. There was also considerable damage to roads, bridges and agriculture across the Northeast. Severe storms also caused high wind and hail impacts across Wisconsin, Minnesota and Illinois.			
<b>Central Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.9B (\$2.0B)</i>	<i>3 Deaths</i>
June 2023: Severe storms caused damage across numerous Central states. The state most impacted were Missouri, Illinois and Indiana while there were also damage in many surrounding states. The damage to many homes, vehicles, businesses and agriculture assets was largely from high wind and damaging hail but there were also scattered tornado impacts.			
<b>Rockies Hail Storms and Central and Eastern Severe Weather</b>	<i>Severe Storm</i>	<i>\$5.2B (\$5.3B)</i>	<i>8 Deaths</i>
June 2023: Severe hail storms across Colorado damaged many homes, vehicles and injured approximately 100 people at a large outdoor concert. This multi-day outbreak of severe weather also produced more than 60 tornadoes across portions of Wyoming, Colorado, Minnesota, Indiana, Kentucky and Arkansas that caused damage to homes, businesses, vehicles, agriculture and other infrastructure.			
<b>Central and Southern Severe Weather</b>	<i>Severe Storm</i>	<i>\$3.8B</i>	<i>5 Deaths</i>
June 2023: Severe storms produce over one thousand reports of damaging weather across Oklahoma, Texas, Mississippi, Georgia, Florida, Arkansas and Ohio. Among these reports were over 70 preliminary tornadoes including an EF-3 tornado in Louin, Mississippi. This combination of high winds, hail and tornadoes caused damage to homes, businesses, vehicles, agriculture and other infrastructure. The damage was most focused in Oklahoma.			
<b>Southern Severe Weather</b>	<i>Severe Storm</i>	<i>\$4.0B (\$4.1B)</i>	<i>0 Deaths</i>
June 2023: Numerous southern states including Texas, Louisiana, Mississippi, Alabama, Georgia, Tennessee, Arkansas, South Carolina and Florida were impacted by hail, tornadoes and high winds. These storms caused damage to many homes, vehicles and businesses across several days of severe storm activity.			
<b>Typhoon Mawar</b>	<i>Tropical Cyclone</i>	<i>\$4.3B</i>	<i>2 Deaths</i>
May 2023: A Category 4 Typhoon struck Guam on May 24 battering the island for 15 hours until the early morning of May 25. Typhoon Mawar's wind speeds of up to 145 mph damaged residential and commercial buildings, vehicles and infrastructure. Several			



U.S. military bases including Andersen Air Force Base sustained considerable damage. Guam's international airport also sustained flood damage.

<b>Texas Hail Storms</b>	<i>Severe Storm</i>	<b>\$1.6B (\$1.7B)</b>	<b>0 Deaths</b>
May 2023: Texas hail storms impact numerous counties across north central Texas. Collin county in particular was impacted by golf ball to tennis ball sized hail causing damage to homes, vehicles and businesses.			
<b>Central and Eastern Tornadoes and Hail Storms</b>	<i>Severe Storm</i>	<b>\$3.4B (\$3.5B)</b>	<b>1 Death</b>
May 2023: Dozens of tornadoes and severe hail storms from the eastern Rockies and across several central states. The most costly severe hail impacts were focused in Colorado while numerous tornadoes also impacted western Kansas, central Oklahoma and eastern Nebraska. Texas and North Dakota were also impacted from combination of high winds, hail and isolated tornadoes with damage to homes, businesses, vehicles, farms and other infrastructure.			
<b>Central Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.1B (\$2.2B)</b>	<b>1 Death</b>
May 2023: Severe weather across numerous central states including Missouri, Illinois, Iowa, and Indiana. There was additional damage in Kentucky, Tennessee, South Carolina and Texas. Large hail, high winds and torandoes caused widespread impact to many homes, businesses, vehicles, farms and other infrastructure.			
<b>Southern Severe Weather</b>	<i>Severe Storm</i>	<b>\$1.3B</b>	<b>0 Deaths</b>
April 2023: Southern severe weather across Texas, Georgia and Florida. Considerable hail and wind damage to many homes, businesses, vehicles and other infrastructure.			
<b>Central Severe Weather</b>	<i>Severe Storm</i>	<b>\$3.0B</b>	<b>1 Death</b>
April 2023: Severe hail, scattered tornadoes and high winds caused damage across numerous central states. Central Oklahoma was impacted by a cluster of tornadoes. Texas, Missouri, Nebraska, Kansas, Iowa, Illinois and Wisconsin was impacted by hail and high wind damage from severe storms.			
<b>Central and Southern Severe Weather</b>	<i>Severe Storm</i>	<b>\$1.3B (\$1.4B)</b>	<b>0 Deaths</b>
April 2023: Several central and southern states including Missouri, Arkansas, Illinois, Texas, Louisiana and the Florida Panhandle were impacted by hail, tornadoes and high winds. These storms caused damage to many homes, vehicles and businesses.			
<b>Fort Lauderdale Flash Flood</b>	<i>Flooding</i>	<b>\$1.1B</b>	<b>0 Deaths</b>
April 2023: Historical rainfall and flash flooding inundated Fort Lauderdale and surrounding areas with over 25 inches of rainfall in less than 24 hours. This resulted in many flooded homes, vehicles and businesses. The Fort Lauderdale Airport also closed on April 13 due to the flooding.			
<b>Central and Eastern Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.8B (\$2.9B)</b>	<b>5 Deaths</b>
April 2023: Severe storms produced large hail, high winds and more than 35 tornadoes across many central and southern states. The states most affected were Illinois, Kentucky, Iowa, Indiana, Ohio, Missouri and Michigan where there was considerable damage to homes, businesses, agriculture, vehicles and other infrastructure.			
<b>Central Tornado Outbreak and Eastern Severe Weather</b>	<i>Severe Storm</i>	<b>\$5.6B (\$5.8B)</b>	<b>33 Deaths</b>
March 2023: A historic tornado outbreak across numerous central states caused widespread damage from at least 145 tornadoes. States most impacted were Illinois, Indiana, Ohio, Missouri, Iowa, Arkansas, Tennessee and Pennsylvania where there was severe damage to homes, businesses, vehicles, agriculture and other infrastructure.			
<b>Southern and Eastern Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.8B (\$2.9B)</b>	<b>23 Deaths</b>
April 2023: Southern and eastern severe storms including more than 40 tornadoes caused damage across Mississippi, Alabama, Georgia, Tennessee to many homes, businesses, vehicles and other infrastructure. Additional high wind damage occurred in parts of Ohio, West Virginia and Pennsylvania.			
<b>California Flooding</b>	<i>Flooding</i>	<b>\$4.5B (\$4.7B)</b>	<b>22 Deaths</b>
December 2022 - March 2023: Numerous atmospheric rivers in continuous succession caused severe flooding, record snowfall and copious rainfall that significantly reduced drought deficits across California, between late-December and March 2023. Flooding impacted many homes, businesses, levees, agriculture and other infrastructure particularly across central California.			
<b>Southern and Eastern Severe Weather</b>	<i>Severe Storm</i>	<b>\$5.9B (\$6.1B)</b>	<b>13 Deaths</b>
March 2023: Severe storms impact numerous southern and eastern states including Texas, Alabama, Mississippi, Tennessee,			



Kentucky, Indiana and Ohio. Impacts from high wind and tornadoes cause widespread damage to homes, vehicles, businesses, government buildings and infrastructure.

**Northeastern Winter Storm / Cold Wave** *Winter Storm* \$1.8B 1 Death

February 2023: A strong winter storm produced snow, high winds and bitter cold across numerous Northeastern states. High winds caused widespread power outages in Massachusetts while Mount Washington, New Hampshire observed a wind chill temperature of -108 degrees Fahrenheit. This was one of the coldest wind chill temperatures ever recorded in the United States.

**2022** 18 Events \$170.5B (\$180.5B) 474 Deaths

**Western/Central Drought and Heat Wave** *Drought* \$21.0B (\$23.1B) 136 Deaths

2022: Severe drought conditions impacted many Western and Central states. Large reservoirs across the West including Lake Mead, Lake Powell, Lake Oroville, and Shasta Lake, among others continue to be depleted. Lake Mead, the Nation's largest reservoir, is nearing dead pool status and is at the lowest level since it was filled in the 1930s. The Great Salt Lake is also near record-low levels. The impacts of the drought affected crop production across many states and sharply increased feeding costs for livestock. Many segments of the Mississippi River also experienced low water levels causing delays and reductions in river commerce. Extreme heat also developed for many days across Western and Central states. These excess heat conditions caused more than one hundred heat-related fatalities focused across Arizona, Nevada, California, Oregon and Texas. The 2022 drought was one of the costlier droughts on record, with a diverse array of direct impacts across different regions and industries.

**Central and Eastern Winter Storm and Cold Wave** *Winter Storm* \$8.4B (\$8.8B) 87 Deaths

December 2022: Historic winter storm and powerful arctic front caused significant impact across much of the nation, bringing heavy rains, snow, ice and high winds that sent temperatures plummeting. More than 200 million people were under a winter weather advisory or warning and more than a million customers, from Texas to Maine, were left without power. Buffalo, New York was paralyzed by near hurricane force winds and continuous snow squalls, which contributed to dozens of fatalities in the region. Additional impacts were widespread frozen water pipes that led to extensive water damage in many homes, businesses and to other critical infrastructure.

**Western Wildfires** *Wildfire* \$3.1B (\$3.3B) 17 Deaths

Spring-Fall 2022: Severe drought conditions and periods of extreme heat provided conditions favorable for another damaging western wildfire season most focused across New Mexico, Oregon, Idaho, Montana, California and Alaska. The Calf Canyon and Hermits Peak Fires in New Mexico merged in April consuming over 340,000 acres. This became the largest and most destructive wildfire on record in New Mexico - damaging or destroying over 1,000 structures. Other large wildfires included the Double Creek Fire (Oregon), the Moose Fire (Idaho), the Mosquito Fire (California), the Trail Creek Fire (Montana) and the Lime Complex Fire (Alaska), among many others. Over 7.5 million acres burned nationally during the 2022 wildfire season.

**Hurricane Nicole** *Tropical Cyclone* \$1.0B (\$1.1B) 5 Deaths

November 2022: Category 1 Hurricane Nicole made landfall at North Hutchinson Island, Florida producing heavy rain, flooding and coastal erosion. Many of the Florida counties and communities impacted by Nicole were still recovering from the high wind and flooding impacts of Hurricane Ian several weeks earlier. This compounded the existing damage and recovery timeline. Nicole was the first hurricane to make landfall in Florida during November since Hurricane Kate in 1985.

**Hurricane Ian** *Tropical Cyclone* \$111.8B (\$117.4B) 152 Deaths

September 2022: Ian made landfall near Cayo Costa, Florida, as a Category 4 Hurricane with sustained winds of 150 mph.

**Hurricane Fiona** *Tropical Cyclone* \$2.5B (\$2.6B) 25 Deaths

September 2022: Category 1 Hurricane Fiona causes widespread power outage across central and western Puerto Rico. Extreme rainfall (12-18 inches) from an intensifying hurricane resulted in widespread flooding and mudslides causing damage to many homes, businesses, vehicles and other infrastructure. The regional power grid was also significantly impaired.

**Kentucky and Missouri Flooding** *Flooding* \$1.5B 42 Deaths

July 2022: Eastern Kentucky and eastern Missouri were impacted by major flooding from a stalled frontal system, which damaged thousands of homes, businesses, vehicles and other infrastructure in late-July. Areas around St. Louis received 8-12 inches of rainfall that required swift water rescues due to flooded interstates and homes across the St. Louis metropolitan area. A large region of 5-10+ inches of rainfall across eastern Kentucky produced deadly flash flooding. Over 600 helicopter rescues and many swift water rescues by boat were needed to evacuate people who were trapped by the quickly-rising flood waters. The North Fork of the Kentucky River at Jackson also reached major flood stage setting a new record crest of 43.47' (the previous record was 43.1' set in 1939).



<b>North Central and Eastern Severe Weather</b>	<i>Severe Storm</i>	<b>\$1.3B (\$1.4B)</b>	<b>1 Death</b>
July 2022: Severe weather with high winds and 19 tornadoes impact numerous states including North Dakota, Minnesota, Wisconsin, Michigan, Illinois, Indiana, Ohio, Pennsylvania, Virginia, Maryland and New York. Many homes, businesses, vehicles, agriculture and other infrastructure were damaged.			
<b>Central Derecho</b>	<i>Severe Storm</i>	<b>\$3.2B (\$3.4B)</b>	<b>1 Death</b>
June 2022: A powerful derecho carved a path a high wind damage across several states with the impacts focused in Michigan, Illinois, Indiana and Ohio. Thousands of trees were downed from the high winds causing damage to many homes, businesses, vehicles, power lines and other infrastructure. There was also considerable hail damage across southern Wisconsin.			
<b>Central Severe Weather</b>	<i>Severe Storm</i>	<b>\$1.9B (\$2.0B)</b>	<b>0 Deaths</b>
June 2022: Severe weather produced damaging hail, high wind and damage from more than two dozen tornadoes across numerous states including Colorado, Nebraska, Kansas, Missouri, Oklahoma, Texas, Iowa and Ohio. Hail and high wind damage was severe across much of Nebraska causing widespread damage to homes, businesses, vehicles, farms and agriculture and other infrastructure.			
<b>North Central Hail Storms</b>	<i>Severe Storm</i>	<b>\$2.4B (\$2.6B)</b>	<b>0 Deaths</b>
May 2022: Severe hail storms with numerous reports of golf-balled sized hail causing damage across southeastern Minnesota and western Wisconsin. These hail storms were south of the hail storms that damaged many homes, vehicles and businesses just 10 days earlier on May 9.			
<b>North Central Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.7B (\$2.9B)</b>	<b>1 Death</b>
May 2022: Severe weather causes tornado, hail and high wind damage across several states including South Dakota, Nebraska, Minnesota and Wisconsin. Hail and high winds impacted southern Minnesota including the cities of St. Cloud and the Minneapolis metro area. In addition, numerous reports of high wind damage occurred across eastern Nebraska. There were also more than two dozen tornadoes that impacted eastern South Dakota and central Minnesota causing damage to homes, vehicles, businesses, agriculture and other infrastructure.			
<b>North Central Hail Storms</b>	<i>Severe Storm</i>	<b>\$2.2B (\$2.3B)</b>	<b>0 Deaths</b>
May 2022: Numerous hail storms caused extensive damage across south-central Minnesota and into western Wisconsin. There were many reports of golf ball to baseball-sized hail damaging homes, vehicles, businesses and other infrastructure.			
<b>Southern and Central Severe Weather</b>	<i>Severe Storm</i>	<b>\$1.1B (\$1.2B)</b>	<b>1 Death</b>
May 2022: Severe weather producing high winds and large, damaging hail impacted several Southern and Central states including Texas, Oklahoma, Ohio and Pennsylvania. Many homes, businesses, vehicles and agriculture assets were damaged.			
<b>Southern Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.7B (\$2.9B)</b>	<b>1 Death</b>
April 2022: Severe weather including hundreds of damaging wind reports and dozens of tornadoes occurred across Arkansas, Louisiana, Mississippi, Alabama, Texas, Tennessee and Kentucky. On April 11, tornadoes and damaging hail was focused across central Arkansas causing damage to homes, vehicles, outbuildings and farms and vegetation. April 12 and 13 produced widespread high wind reports and dozens of tornadoes across central Mississippi, northeast Arkansas and west-central Kentucky. These tornadoes produced damage to homes, businesses, farms, outbuildings and other infrastructure. There was also considerable hail damage across Wisconsin and Minnesota.			
<b>Southeast Tornado Outbreak</b>	<i>Severe Storm</i>	<b>\$1.4B (\$1.5B)</b>	<b>3 Deaths</b>
April 2022: A tornado outbreak on April 4-6 with a combined 100 preliminary tornadoes reported. The tornadoes occurred across Texas, Louisiana, Mississippi, Alabama, Georgia, Florida and South Carolina. Many of these tornadoes were clustered along the southern regions of Mississippi, Alabama, Georgia and South Carolina. During this three-day period many of these tornadoes were rated as either EF-1 or EF-0, but there were also nine EF-2, three EF-3 and one EF-4 tornado. This EF-4 occurred in Pembroke, Georgia on April 5th with winds of 185 mph that destroyed several neighborhoods. Many of the other tornadoes across the South caused considerable damage to homes, businesses, vehicles, and other infrastructure.			
<b>Southern Tornado Outbreak</b>	<i>Severe Storm</i>	<b>\$1.3B (\$1.4B)</b>	<b>2 Deaths</b>
March 2022: An outbreak of 83 tornadoes was focused across the Gulf Coast states including Louisiana, Mississippi, Alabama, and Florida.			
<b>Texas Hail Storms</b>	<i>Severe Storm</i>	<b>\$1.0B (\$1.1B)</b>	<b>0 Deaths</b>
February 2022: Overnight hail storms impacted numerous counties across north central Texas. In particular, the counties of Denton,			



Collin and Wise were impacted by ping pong to golf ball sized hail causing damage to homes, vehicles and businesses.

**2021** *20 Events* *\$141.0B (\$161.5B)* *724 Deaths*

**Western Wildfires** *Wildfire* *\$10.4B (\$11.9B)* *8 Deaths*

2021: Severe drought conditions and periods of extreme heat provided conditions favorable for another damaging western wildfire season most focused across California, Colorado, Oregon, Washington, Idaho, Montana and Arizona. The Dixie Fire consumed over 960,000 acres making it the second-largest wildfire on record in California while also destroying more than 1,000 structures. California's Caldor Fire grew rapidly during August, threatening South Lake Tahoe communities and burned over 220,000 acres. Other large wildfires included the Ford Corkscrew Fire (Washington), the Bootleg Fire (Oregon), the Boundary Fire (Idaho), the Trail Creek Fire (Montana) and the Telegraph Fire (Arizona), among many others. There was also the Marshall Fire in Boulder County, Colorado on December 30 that damaged or destroyed more than 1,000 homes and businesses. This wildfire is the most destructive on record in Colorado. Throughout the wildfire season air quality was also a concern across numerous states, as ash and fine particulates from wildfires obscured the skies and made outdoor activities more hazardous. Over 7.1 million acres burned nationally during the 2021 wildfire season.

**Western Drought and Heat Wave** *Drought* *\$8.4B (\$10.0B)* *229 Deaths*

2021: Western drought conditions were persistent throughout 2021, as the drought expanded and intensified across many Western states. A historic heat wave also developed for many days across the Pacific Northwest shattering numerous all-time high temperature records across the region. This prolonged heat dome was maximized over the states of Oregon and Washington and extended well into Canada. These extreme temperatures impacted several major cities and millions of people. For example, Portland reached a high of 116 degrees F while Seattle reached 108 degrees F. These extreme temperatures caused hundreds of direct and indirect heat-related fatalities across Oregon and Washington, not including excess mortality that may be hundreds of additional deaths. This combined drought and heat rapidly dried out vegetation across the West, impacting agriculture. Low water levels also forced the hydroelectric power plant at Lake Oroville in California to shut down for the first time since it opened in 1967.

**Midwest Derecho and Tornado Outbreak** *Severe Storm* *\$1.8B (\$2.0B)* *1 Death*

December 2021: A rare, record-breaking December derecho and tornado outbreak caused widespread damage that was focused across Kansas, Nebraska, Iowa, Minnesota and Wisconsin. There were many reports of hurricane-force thunderstorm wind gusts and more than 50 tornadoes causing widespread damage to homes, vehicles, businesses and infrastructure. This was the first December derecho on record to occur within the United States. This event also produced the first December tornado on record in Minnesota since 1950, with 17 tornadoes reported across southeast Minnesota.

**Southeast, Central Tornado Outbreak** *Severe Storm* *\$3.9B (\$4.4B)* *93 Deaths*

December 2021: Historic December tornado outbreak across several southeast and central states caused devastating damage across many towns and cities. This outbreak produced two long-tracked EF-4 tornadoes across Arkansas, Missouri, Tennessee and Kentucky. The longest tornado track was nearly 166 miles across Kentucky and a small portion of Tennessee. This was the longest-tracked tornado on record in Kentucky and was a U.S. record tornado track length for the month of December. There were over 800 total miles of tornado path length on December 10. The peak intensity from this outbreak was EF-4 rated wind speeds of 190 mph in Mayfield, Kentucky. This day was also the deadliest December tornado outbreak recorded in the United States surpassing the Vicksburg, Mississippi tornado of December 5, 1953, which caused 38 fatalities.

**Hurricane Nicholas** *Tropical Cyclone* *\$1.0B (\$1.1B)* *0 Deaths*

September 2021: Category 1 Hurricane Nicholas made landfall near Sargent Beach, Texas on September 14 and moved slowly toward Louisiana over the next several days. This slow progression helped to produce flooding rainfall across regions of the Gulf Coast that were already saturated from Hurricane Ida.

**Hurricane Ida** *Tropical Cyclone* *\$73.6B (\$83.1B)* *96 Deaths*

August 2021: Category 4 Hurricane Ida made landfall near Port Fourchon, Louisiana with maximum sustained winds of 150 mph (240km/h) and a minimum central pressure of 930 mb. Ida was one of three hurricanes in recorded history to make landfall in Louisiana with 150 mph winds, along with Hurricane Laura in 2020 and the 'Last Island' hurricane of 1856. Grand Isle, Louisiana took a direct hit with 100% of its homes damaged and nearly 40% were nearly-to-completely destroyed. There was heavy damage to the energy infrastructure across southern Louisiana causing widespread, long duration power outages to millions of people. Parts of New Orleans were without power for nearly a week due to the widespread damage. As the remnants of Ida moved into the Northeast it merged with a frontal system creating severe weather and flash flooding across a wide region from eastern Pennsylvania to New York. Flash flood emergencies were declared in New Jersey and New York for the first time, producing damage to homes, businesses, vehicles and infrastructure while also causing dozens of fatalities.



<b>Tropical Storm Fred</b>	<i>Tropical Cyclone</i>	\$1.3B (\$1.5B)	7 Deaths
August 2021: Tropical Storm Fred made landfall near Panama City, Florida. As Fred progressed northward it caused torrential flooding across the southern Appalachian Mountains with more than a foot of rainfall reported in some locations of western North Carolina. This flash flooding caused damage to many homes, businesses, vehicles, roads and bridges, in addition to several fatalities. Fred also produced nearly a dozen tornadoes across the Northeast as it moved up the East Coast.			
<b>North Central Severe Weather</b>	<i>Severe Storm</i>	\$1.3B (\$1.5B)	2 Deaths
August 2021: Widespread high wind impacts across numerous North Central states including Illinois, Michigan, Wisconsin, Indiana, Ohio and Missouri. This multi-day event caused damage to infrastructure, homes, vehicles and businesses.			
<b>Central Severe Storms</b>	<i>Severe Storm</i>	\$1.1B (\$1.2B)	0 Deaths
July 2021: Severe storms caused considerable hail damage across numerous Central states including Missouri, Nebraska, Iowa, South Dakota, North Dakota, New Mexico and Texas. There was also widespread high wind damage to homes, vehicles and businesses in many other surrounding states.			
<b>Tropical Storm Elsa</b>	<i>Tropical Cyclone</i>	\$1.2B (\$1.4B)	1 Death
July 2021: Tropical Storm Elsa made landfall in Taylor County, Florida producing heavy rain, wind, flooding and tornadoes in portions of Florida, Georgia and the Carolinas, as well as flooding across parts of the Northeast. Southern New England and New York's Long Island experienced flash flooding, leading to impassable roads, stranded vehicles and disruption. Elsa was the earliest fifth-named storm on record.			
<b>Central Severe Storms</b>	<i>Severe Storm</i>	\$1.3B (\$1.4B)	0 Deaths
June 2021: A combination of thunderstorm high winds, hail and tornadoes affected numerous Central states. The states most affected included Michigan, Illinois, Indiana, Ohio, Missouri, Kansas and Texas with damage to homes, businesses, vehicles and agriculture.			
<b>Ohio Valley Hail Storms</b>	<i>Severe Storm</i>	\$1.7B (\$1.9B)	0 Deaths
June 2021: Damaging hail storm and high wind impacts across several states including Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa and Missouri. The hail impacts were most severe in southeastern Minnesota, southern Iowa, southeastern Indiana and southwestern Ohio, with damage to many homes, vehicles and businesses.			
<b>Louisiana Flooding</b>	<i>Flooding</i>	\$1.3B (\$1.5B)	5 Deaths
May 2021: Torrential rainfall from thunderstorms across Louisiana and coastal Texas caused widespread flooding and resulted in hundreds of water rescues. Baton Rouge and Lake Charles experienced flood damage to thousands of homes, vehicles and businesses, as more than 12 inches of rain fell. Lake Charles also continues to recover from the widespread damage caused by Hurricanes Laura and Delta less than 9 months before this flood event.			
<b>Southern Tornadoes and Southeast Severe Weather</b>	<i>Severe Storm</i>	\$1.3B (\$1.5B)	4 Deaths
May 2021: Tornadoes and severe storms with widespread high wind and large hail cause damage across many Southern and Southeastern states including Mississippi, Texas, Arkansas, Alabama, Georgia, South Carolina, North Carolina, and Tennessee. There were over 111 confirmed tornadoes largely clustered in central Mississippi and surrounding states.			
<b>Texas and Oklahoma Severe Weather</b>	<i>Severe Storm</i>	\$3.1B (\$3.7B)	0 Deaths
April 2021: Severe weather including tornadoes, high wind, localized flooding and large hail cause widespread impacts across central Texas and Oklahoma. There was considerable damage across Texas and Oklahoma to many homes, vehicles and businesses particularly from hail storms. Several of the more impacted areas include west of San Antonio, north of Fort Worth, and southwest of San Marcos.			
<b>Texas Hail Storms</b>	<i>Severe Storm</i>	\$1.5B (\$1.7B)	0 Deaths
April 2021: A series of hail storms impacted central Texas causing damage to many homes, vehicles and businesses. There was considerable hail damage northeast of Austin, west of Georgetown and southwest of The Woodlands.			
<b>Eastern Severe Weather</b>	<i>Severe Storm</i>	\$1.3B (\$1.6B)	8 Deaths
March 2021: Severe weather producing hail, high wind and more than two dozen tornadoes impacted numerous states including Arkansas, Alabama, Georgia, Mississippi, South Carolina, North Carolina and Virginia. Tennessee was also affected with significant flooding in Nashville and surrounding areas that damaged businesses, homes and vehicles. There were also many high wind damage reports across Pennsylvania, Maryland and New Jersey.			
<b>Southeast Tornadoes and Severe Weather</b>	<i>Severe Storm</i>	\$1.7B (\$2.0B)	6 Deaths



March 2021: At least 41 tornadoes impact several states including Kentucky, Tennessee, Mississippi, Alabama and Georgia. These included one EF-4, four EF-3s, ten EF-2s and approximately two-dozen EF-1 or EF-0 tornadoes. The strongest of these tornadoes were focused across central Alabama and western Georgia with tracks across the entire width of Alabama. There was widespread damage to homes, businesses, vehicles and infrastructure.

**Northwest, Central, Eastern Winter Storm and Cold Wave**

*Winter Storm*     \$22.7B (\$26.8B)     262 Deaths

February 2021: Historic cold wave and winter storm impacts many northwest, central and eastern states. Temperature departures exceeding 40.0 degrees F (22.2 degrees C) below normal occurred from Nebraska southward to Texas. The prolonged arctic air caused widespread power outages in Texas, as well as other southern states, with multiple days of sustained below-freezing temperatures. At the peak of the outage, nearly 10 million people were without power. Additional impacts were frozen water pipes, which burst upon thawing causing water damage to buildings. These extreme conditions also caused or contributed to the direct and indirect deaths of more than 210 people in Texas alone. This count does not include excess mortality that may be hundreds of additional deaths. There were also snow and ice impacts across numerous states including Oklahoma, Arkansas, Missouri, Illinois, Kentucky, Tennessee, Louisiana, Mississippi, Colorado, Oregon and Washington. This is now the costliest U.S. winter storm event on record, more than doubling the inflation-adjusted cost of the 'Storm of the Century' that occurred in March 1993.

**California Flooding and Severe Weather**

*Flooding*     \$1.1B (\$1.3B)     2 Deaths

January 2021: California was impacted by an atmospheric river in late-January, in which more than 7 inches of rain fell from southern California to the central California coast. Rainfall totals exceeded 15 inches in Monterey and San Luis Obispo counties. These heavy rains caused flooding and mudslides in some of the same areas burned by wildfires in late-2020. This combination caused dozens of slides and debris flows damaging homes, vehicles and businesses and infrastructure. Highway 1 south of Big Sur was washed out while the Sierra Nevada range received several feet of snow, closing major highways. In addition to significant rain and snow, high winds also caused extensive power outages across parts the region.

**2020**

22 Events     \$99.5B (\$118.6B)     262 Deaths

**Western Wildfires - California, Oregon, Washington Firestorms**

*Wildfire*     \$16.5B (\$19.6B)     46 Deaths

Fall 2020: A record-breaking U.S. wildfire season burned more than 10.2 million acres. California more than doubled its previous annual record for area burned (last set in 2018) with over 4.1 million acres. Five of the top six largest wildfires on record in California (dating to 1932) burned during August and September. The August Complex was the largest California wildfire, which began as 37 separate wildfires within the Mendocino National Forest, set off after storms caused >10,000 lightning strikes across Northern California. Approximately 10,500 structures were damaged or destroyed across California. Oregon also had historic levels of wildfire damage, as over 2,000 structures burned. These wildfires spread rapidly and destroyed several small towns in California, Oregon and Washington. Colorado also had a severe wildfire season, as its three largest wildfires on record burned during 2020. Dense wildfire smoke also produced hazardous air quality that affected millions of people that also included major cities for weeks. Hundreds of additional wildfires also burned across other Western states.

**Western/Central Drought and Heat Wave**

*Drought*     \$4.5B (\$5.3B)     45 Deaths

Summer-Fall 2020: Widespread, continuous drought and record heat affected more than a dozen Western and Central states for much of the summer, fall and into the winter months. Persistent above-average temperatures and precipitation deficits caused D3 (extreme) and D4 (exceptional) drought coverage in December that was the largest extent since August 2012. Death Valley recorded a temperature of 130 degrees F - the highest measured temperature globally in decades - while Los Angeles county recorded a record high of 121 degrees F. There were considerable crop and livestock impacts across the West and Central states from both the persistent heat and increasingly dry conditions. The combined drought and heat also assisted in drying out vegetation across the West that contributed to the Western wildfire potential and severity.

**Tropical Storm Eta**

*Tropical Cyclone*     \$1.5B (\$1.7B)     12 Deaths

November 2020: Tropical Storm Eta made landfall in the Florida Keys on November 8 followed by a second landfall near Cedar Key on the west coast of Florida on November 10. Eta produced wind and heavy rain impacts in southern Florida. These impacts continued well inland, as Eta's energy merged with a cold front across several eastern states. This combination produced extreme rainfall across North Carolina and Virginia, which led to significant flooding that damaged homes, businesses and infrastructure. This flooding also caused one dozen fatalities.

**Hurricane Zeta**

*Tropical Cyclone*     \$4.4B (\$5.2B)     6 Deaths

October 2020: Hurricane Zeta was a category 2 hurricane that made landfall at Cocodrie, Louisiana with maximum sustained winds of 110 mph on October 28th. Zeta's path inland saw an acceleration of its quick landfall speed to nearly 40 mph, which allowed the wind fields to maintain some strength. These wind impacts propagated well inland affecting parts of Louisiana, Alabama, Mississippi, northern Georgia and into the Carolinas. Hurricane Zeta was the fifth tropical cyclone to make landfall in Louisiana during 2020 as



part of a historically active Atlantic hurricane season.

### Hurricane Delta

*Tropical Cyclone* \$2.9B (\$3.4B) 5 Deaths

October 2020: Hurricane Delta was a category 2 hurricane that made landfall near Creole, Louisiana with winds of 100 mph on October 9. This was nearly the same location in which category 4 Hurricane Laura made landfall 6 weeks prior. Heavy rainfall, high winds, storm surge, and nearly one dozen EF-0 or EF-1 tornadoes caused damage across several states including Louisiana, eastern Texas, Mississippi and Georgia.

### Hurricane Sally

*Tropical Cyclone* \$7.3B (\$8.7B) 5 Deaths

September 2020: Hurricane Sally was a category 2 hurricane at landfall in Gulf Shores, Alabama. Wind gusts up to 100 mph and 20-30 inches of rainfall caused considerable flood and wind damage across Alabama, the Florida panhandle and into Georgia. Many homes and businesses in downtown Pensacola, FL were impacted from flooding produced by storm surge and heavy rainfall. 2020 is now the fourth consecutive year (2017-2020) that the U.S. has been impacted by a slow moving tropical cyclone that produced extreme rainfall and damaging floods - Harvey, Florence, Imelda and Sally.

### Hurricane Laura

*Tropical Cyclone* \$23.2B (\$27.6B) 42 Deaths

August 2020: Hurricane Laura was a powerful category 4 that made landfall at Cameron Parish, in southwestern Louisiana on August 27. Winds up to 150 mph and storm surge in excess of 15 feet caused heavy damage along the coast and inland to the city of Lake Charles. Many broken water systems and a severely damaged electrical grid in southern Louisiana will slow the recovery process. Laura was the strongest hurricane (by maximum sustained windspeed at landfall) to hit Louisiana since the 1856 Last Island hurricane. Laura also had highest landfall wind speed to impact the U.S. since Hurricane Michael in 2018. There were additional impacts to surrounding states including Texas, Mississippi and Arkansas.

### Central Severe Weather - Derecho

*Severe Storm* \$11.0B (\$13.2B) 4 Deaths

August 2020: A powerful derecho traveled from southeast South Dakota to Ohio, a path of 770 miles in 14 hours producing widespread winds greater than 100 mph. The states most affected included Iowa, Illinois, Minnesota, Indiana and Ohio. This derecho caused widespread damage to millions of acres of corn and soybean crops across central Iowa. There was also severe damage to homes, businesses and vehicles particularly in Cedar Rapids, Iowa. In addition, there were 15 tornadoes across northeastern Illinois several affecting the Chicago metropolitan area. This is the third severe weather event (since 1980) with inflation-adjusted costs over \$10.0 (\$12.0) billion joining the late-April and May 2011 tornado outbreaks across the Southeastern and Central states, respectively.

### Hurricane Isaias

*Tropical Cyclone* \$4.8B (\$5.7B) 16 Deaths

August 2020: Hurricane Isaias made landfall in southeastern North Carolina as a category 1 storm. Isaias accelerated up the East Coast, resulting in widespread damage and power outages across New York, New Jersey and Pennsylvania. There was also considerable inland flooding most notably in Pennsylvania. In addition, 34 tornadoes developed across North Carolina, Virginia, Maryland, Delaware and New Jersey due to Isaias. Many tornadoes were weaker (EF-0 and EF-1) producing scattered damage to agriculture, structures and residences. Isaias also produced several EF-2 tornadoes and one EF-3 tornado that caused damage in coastal North Carolina and Virginia.

### Hurricane Hanna

*Tropical Cyclone* \$1.1B (\$1.3B) 0 Deaths

July 2020: Category 1 Hurricane Hanna made landfall at Padre Island, Texas on July 25 with sustained winds of 90 miles per hour. The impacts from wind, wave action and flooding were most notable in damaging coastal infrastructure and to the agriculture sector. The crop damage was most focused across the Rio Grande Valley in southern Texas.

### Central Severe Weather

*Severe Storm* \$1.2B (\$1.4B) 0 Deaths

July 2020: Central severe weather producing hundreds of severe hail and high wind reports across numerous states including Nebraska, South Dakota, Minnesota, Kansas, Oklahoma, Iowa, Illinois and Indiana. These storms caused impacts to many homes, vehicles and businesses.

### South Texas Hail Storms

*Severe Storm* \$1.4B (\$1.7B) 0 Deaths

May 2020: South Texas hail storms cause widespread impact to several cities with golf-ball sized hail damaging many homes, vehicles and businesses. The highest concentration of hail damage occurred across the northern portion of the San Antonio metroplex. There was also significant damage east of San Marcos, southeast of Waco and to the west and south of Bryan and College Station.

### South, Central and Eastern Severe Weather

*Severe Storm* \$1.6B (\$1.9B) 2 Deaths

May 2020: A combination of thunderstorm high winds, hail and tornadoes affected numerous Southern, Central and Eastern states. The states most affected included Texas, Illinois and North Carolina with damage to homes, businesses and vehicles. Oklahoma, Arkansas, Indiana, Tennessee, Alabama, Georgia, Florida and South Carolina.



<b>Central and Eastern Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.1B (\$2.6B)</b>	<b>2 Deaths</b>
May 2020: Severe weather across several Central and Eastern states including Kansas, Missouri, Arkansas, Tennessee and South Carolina. High wind and hail damage was notably clustered across southern Missouri and western to central Tennessee, which were the states with the highest damage totals for the event.			
<b>Central, Southern and Eastern Severe Weather</b>	<i>Severe Storm</i>	<b>\$1.0B (\$1.2B)</b>	<b>1 Death</b>
April 2020: Severe weather across many Central, Southern and Eastern states produced primarily large hail and high winds that caused widespread damage to many homes, vehicles and businesses. The states affected included Oklahoma, Texas, Missouri, Arkansas, Louisiana, Virginia, Pennsylvania, Maryland, Delaware and New Jersey.			
<b>Southern Severe Weather</b>	<i>Severe Storm</i>	<b>\$1.4B (\$1.6B)</b>	<b>3 Deaths</b>
April 2020: Severe weather caused damage across many Southern states. The states most affected from a combination of high winds, hail and tornadoes included Texas, Oklahoma, Louisiana, Mississippi, Alabama, Georgia, Florida and Virginia. The states with the highest damage totals for the event were Oklahoma, Louisiana and Texas.			
<b>Southeast and Eastern Tornado Outbreak</b>	<i>Severe Storm</i>	<b>\$3.4B (\$4.2B)</b>	<b>35 Deaths</b>
April 2020: Outbreak of at least 140 tornadoes from Texas to Maryland including 3 EF4s, 12 EF3s, 20 EF2s, 77 EF1s and 28 EF0s. Damage was extensive and highly destructive to many homes, vehicles and businesses across more than a dozen Southeast and Eastern states.			
<b>North Central and Ohio Valley Hail Storms and Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.9B (\$3.5B)</b>	<b>0 Deaths</b>
April 2020: Numerous hail storms caused widespread damage across many North Central and Ohio Valley states including Illinois, Iowa, Indiana, Ohio, Michigan, Wisconsin and Missouri. More than 20 tornadoes were also reported across southern Indiana and Ohio. There was additional widespread high wind damage to homes, vehicles and businesses in many other surrounding states.			
<b>Midwest and Ohio Valley Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.6B (\$3.1B)</b>	<b>0 Deaths</b>
March 2020: Severe weather caused damage across many Midwest and Ohio Valley states including Missouri, Oklahoma, Texas, Illinois, Indiana, Ohio, Arkansas, Kentucky, Tennessee, West Virginia and Pennsylvania. The states most affected from a combination of high winds and hail were Missouri, Ohio and Arkansas. There were also two dozen tornadoes across Iowa, Illinois, Indiana and Arkansas causing additional damage.			
<b>Tennessee Tornadoes and Southeast Severe Weather</b>	<i>Severe Storm</i>	<b>\$2.3B (\$2.8B)</b>	<b>25 Deaths</b>
March 2020: Powerful EF-3 and EF-4 tornadoes cause considerable damage across the Nashville metroplex and several counties east of Nashville. This damage included many homes, businesses, vehicles, 90 planes and numerous buildings at the Nashville airport. There was also additional hail and wind damage in the surrounding states including Alabama, Kentucky, Mississippi and Missouri.			
<b>South, East and Northeast Severe Weather</b>	<i>Severe Storm</i>	<b>\$1.3B (\$1.5B)</b>	<b>3 Deaths</b>
February 2020: Severe weather across many South, East and Northeastern states including AL, FL, GA, SC, LA, MS, TN, NC, VA, PA, RI, NY, NJ, MD and MA. There were more than 20 tornadoes clustered across central Mississippi into Tennessee. There were also hundreds of high wind damage reports from Florida to New Jersey, with the Carolinas and Florida receiving the most costly damage.			
<b>Southeast Tornadoes and Northern Storms and Flooding</b>	<i>Severe Storm</i>	<b>\$1.1B (\$1.4B)</b>	<b>10 Deaths</b>
January 2020: More than 80 tornadoes and severe storms caused damage across many southeastern states (AL, AR, GA, IL, IN, KY, LA, MS, MO, NC, OH, SC, TN, TX, VA, WI). Storms and severe flooding also impacted northern states including Michigan, Wisconsin and New York. Significant damage occurred along the shoreline of Lake Michigan to roads, the foundation of homes and to Port Milwaukee. These powerful waves were generated by high winds and a lack of seasonal ice cover.			

**2019** *14 Events*    **\$44.8B (\$54.6B)**    **44 Deaths**

**California and Alaska Wildfires** *Wildfire*    **\$4.5B (\$5.4B)**    **3 Deaths**

Summer-Fall 2019: California experienced a damaging wildfire season in 2019, largely resulting from the Kincadee and Saddle Ridge wildfires. In addition, a key California electrical utility provider turned off power to millions of homes and businesses several times during days with forecasted high winds and extremely dry conditions. This step was designed to minimize wildfires, with some success, but it also caused billions of dollars in losses to those affected. Alaska also suffered a near-historic wildfire season with more



than 2.5 million acres burned. These wildfire conditions were primed due to Alaska's record-breaking heat and dry conditions during the summer months. July 2019 was the warmest month ever recorded in Alaska.

**Texas Tornadoes and Central Severe Weather** *Severe Storm* \$1.7B (\$2.1B) 2 Deaths

October 2019: Numerous tornadoes caused widespread damage across northern Dallas damaging thousands of homes, vehicles, businesses and other public infrastructure. Tornadoes up to EF-3 intensity with maximum winds of 140 mph tracked across a large section of highly developed northern Dallas. Additionally high winds and hail damage also caused damage in other states including Oklahoma, Missouri, Arkansas, Louisiana and Tennessee.

**Tropical Storm Imelda** *Tropical Cyclone* \$5.0B (\$6.1B) 5 Deaths

September 2019: Tropical storm and its remnants cause 24 to 36 inches of rainfall over a 3-day period across a large area between Houston and Beaumont, Texas. The largest storm total, 43.39 inches, was reported at North Fork Taylors Bayou, Texas. Many thousands of homes, cars and businesses were impacted by flood water due to this extraordinarily heavy rainfall. Imelda is yet another of the historically extreme rainfall and flood events that have become a regular occurrence across Southeast Texas over the last 5 years.

**Hurricane Dorian** *Tropical Cyclone* \$1.6B (\$1.9B) 10 Deaths

September 2019: Category 1 hurricane makes landfall on the Outer Banks of North Carolina, after devastating the northern Bahama Islands as a historically-powerful and slow-moving hurricane. Dorian tracked offshore parallel to the Florida, Georgia and South Carolina coastline before making a North Carolina landfall, bringing a destructive sound-side surge that inundated many coastal properties and isolated residents who did not evacuate. Significant flood, severe storm, and tornado damage to many homes and businesses occurred on the Outer Banks of North Carolina. Dorian's intensification to a category 5 storm marks the fourth consecutive year, in which a maximum category 5 storm developed in the Atlantic basin - a new record. Dorian also tied the record for maximum sustained wind speed for a landfalling hurricane (185 mph) in the Atlantic, a record shared with the historic 1935 Labor Day Hurricane.

**Mississippi River, Midwest and Southern Flooding** *Flooding* \$6.2B (\$7.5B) 4 Deaths

July 2019: Additional major flooding impacted many Southern Plains states significantly affecting agriculture, roads, bridges, levees, dams and other assets across many cities and towns. The states most affected were Oklahoma, Nebraska, Missouri, Illinois, Kansas, Arkansas, Kentucky, Tennessee, Texas, Mississippi and Louisiana. Very high water levels also disrupted barge traffic along the Mississippi River, which negatively impacted a variety of dependent industries. Indiana and Ohio were also affected by persistent heavy rainfall that flooded farmland, which prevented and reduced crop planting by millions of acres.

**Colorado Hail Storms** *Severe Storm* \$1.0B (\$1.2B) 0 Deaths

July 2019: Colorado hail storms across the Denver and Fort Collins that damaged many homes and vehicles.

**Arkansas River Flooding** *Flooding* \$3.0B (\$3.7B) 5 Deaths

June 2019: Historic flooding impacts the Arkansas River Basin with damage to homes, agriculture, roads, bridges and levees focused across eastern Oklahoma and western Arkansas. Thousands of homes, cars and businesses were flooded due a combination of high rivers, levee failure and persistently heavy rainfall from May 20 through June.

**Rockies, Central and Northeast Tornadoes and Severe Weather** *Severe Storm* \$4.6B (\$5.6B) 3 Deaths

May 2019: A four-day tornado outbreak impacts many states across the Rockies, Central and Northeast (CO, WY, NE, KS, OK, MO, IA, IL, IN, OH, PA and NJ). This outbreak produced 190 tornadoes in addition to hundreds of reports of damaging hail and straight-line thunderstorm winds. Of particular note was an EF-4 tornado that produced heavy damage near the city of Dayton, Ohio on May 27.

**Central Severe Weather** *Severe Storm* \$1.0B (\$1.2B) 0 Deaths

May 2019: Central severe storms across the Illinois, Indiana, Iowa and Texas damaged many homes, businesses and vehicles.

**South and Southeast Severe Weather** *Severe Storm* \$1.5B (\$1.8B) 0 Deaths

May 2019: Persistent severe storms impacted numerous states from Texas to North Carolina (TX, OK, KS, AR, LA, MS, AL, NC). Tornadoes and damaging hail particularly affected Texas, Louisiana and North Carolina focused across the Raleigh metro region.

**Southern and Eastern Tornadoes and Severe Weather** *Severe Storm* \$1.3B (\$1.5B) 7 Deaths

April 2019: Tornado outbreak and severe storms impacted many states (TX, LA, MS, AL, GA, NC, OH and PA). More than 50 tornadoes occurred across central Mississippi and Alabama causing damage to vehicles, homes and businesses. More than 25 additional tornadoes also caused damage across several eastern states from Georgia to Pennsylvania. These severe storms also



delivered damaging hail and high wind damage that was widespread across many Southern and Eastern states.

### Missouri River and North Central Flooding

Flooding

\$10.7B (\$13.2B)

3 Deaths

March 2019: Historic Midwest flooding inundated millions of acres of agriculture, numerous cities and towns, and caused widespread damage to roads, bridges, levees, and dams. The states most affected were Nebraska, Iowa, Missouri, South Dakota, Minnesota, North Dakota, Wisconsin and Michigan. This flood was triggered by a powerful storm with heavy precipitation that intensified snow melt and flooding. Of note, the Offutt Air Force Base in Nebraska was also severely flooded - the third U.S. military base to be damaged by a billion-dollar disaster event over a 6-month period (Sept 2018-Feb 2019). This historic flooding was one of the costliest U.S. inland flooding events on record.

### Texas Hail Storm

Severe Storm

\$1.5B (\$1.9B)

0 Deaths

March 2019: Texas hail storm over the Dallas metroplex damaged many homes, businesses and vehicles. Oklahoma also received hail damage resulting from the same severe weather system.

### Southeast, Ohio Valley and Northeast Severe Weather

Severe Storm

\$1.2B (\$1.5B)

2 Deaths

February 2019: Tornadoes, severe weather and flooding in the south (MS, AL, TN) and high-wind damage across many Ohio Valley (IL, IN, OH) and Northeastern states (CT, MD, MA, NJ, NY, PA, VA, WV). This storm system produced heavy rain that caused major flooding along parts of the Ohio, Mississippi and Tennessee rivers.

## 2018

16 Events

\$91.9B (\$113.9B)

247 Deaths

### Western Wildfires, California Firestorm

Wildfire

\$24.0B (\$29.5B)

106 Deaths

Summer-Fall 2018: In 2018, California has experienced its costliest, deadliest and largest wildfires to date, with records back to 1933. The Camp Fire is the costliest and deadliest wildfire - destroying more than 18,500 buildings. California also endured its largest wildfire on record - the Medincino Complex Fire - burning over 450,000 acres. Additionally, California was impacted by other destructive wildfires: the Carr Fire in Northern California and the Woolsey Fire in Southern California. The total 2018 wildfire costs in California (with minor costs in other Western states) approach \$24.0 (\$29.5) billion - a new U.S. record. In total, over 8.7 million acres has burned across the U.S. during 2018, which is well above the 10-year average (2009-2018) of 6.8 million acres. The last 2 years of U.S. wildfire damage has been unprecedented in damage, with losses exceeding \$40.0 (\$49.2) billion.

### Southwest/Southern Plains Drought

Drought

\$3.0B (\$3.7B)

0 Deaths

Summer-Fall 2018: Drought conditions were present across numerous Southwestern and Plains states (TX, OK, KS, MO, CO, NM, AZ, UT). The most extreme drought conditions continue to persist across the Four Corners region of the Southwest. The agriculture sector has been impacted across the affected states including damage to field crops from lack of rainfall. Ranchers have also been forced to sell-off livestock early in some regions due to high feeding costs.

### Hurricane Michael

Tropical Cyclone

\$25.0B (\$30.7B)

49 Deaths

October 2018: Powerful category 5 hurricane made landfall at Mexico Beach, Florida with devastating winds of 160 mph and storm surge in excess of 15 feet. Mexico Beach was nearly destroyed, while Panama City suffered extensive damage. Florida's Tyndall Air Force Base also suffered a direct strike from Michael's most intense eye wall winds causing billions in damage costs. Michael's intense winds also reached well inland causing billions in damage costs to agriculture and forestry, as high winds hit during harvest season for numerous crops across several states. Michael is the third category 4 or higher storm to make landfall in the U.S. since 2017. Michael is the first category 5 to strike the U.S. mainland since Hurricane Andrew in 1992 and is only the fourth on record. The others are the Labor Day Hurricane (1935) and Hurricane Camille (1969). Michael was initially rated as a category 4 with 155 winds but upgraded to a category 5 with 160 mph winds upon further analysis.

### Hurricane Florence

Tropical Cyclone

\$24.0B (\$29.5B)

53 Deaths

September 2018: Hurricane Florence was a large and very slow moving hurricane that produced extreme rainfall across eastern North Carolina (up to 35.93") and South Carolina (up to 23.81"), as prodigious amounts of rainfall were common in many locations. Florence made landfall as a category 1, at Wrightsville Beach, NC with damaging storm surge up to 10 feet and wind gusts reported over 100 mph. However, the majority of the damage caused by Florence was due to the rainfall inland, which caused many rivers to surpass previous record flood heights. U.S. Marine base Camp Lejeune in North Carolina suffered extensive damage that will cost billions to repair. The total damage from Florence in North Carolina is more than the cost experienced during Hurricane Matthew (2016) and Hurricane Floyd (1999) combined.

### Rockies and Plains Hail Storms

Severe Storm

\$1.0B (\$1.3B)

0 Deaths

August 2018: Severe hail impacts from baseball to softball size impacted several states including Colorado, Nebraska and Wyoming. The most costly impacts occurred in numerous locations of eastern Colorado.



<b>Mountain West Severe Weather</b>	<i>Severe Storm</i>	(\$1.0B)*	0 Deaths
July 2018: Severe weather including hail, high winds and 19 tornadoes impacted Montana, Wyoming and Colorado. These impacts caused damage to homes, businesses, vehicles and other infrastructure.			
<b>Central and Eastern Tornadoes and Severe Weather</b>	<i>Severe Storm</i>	\$1.6B (\$1.9B)	0 Deaths
July 2018: At least 41 tornadoes and high wind damage from thunderstorms impact numerous Central and Eastern states (MO, IA, IL, IN, KS, KY, AL, AR, GA, TN, NC, SC, VA, MD, PA) over a multi-day event. The tornado damage was most severe across Iowa.			
<b>Colorado Hail Storm</b>	<i>Severe Storm</i>	\$2.2B (\$2.7B)	0 Deaths
June 2018: Severe hail storms cause golf ball to baseball-sized hail and widespread damage in many areas from northern Denver to Boulder and Fort Collins. Many homes, businesses and vehicles were impacted. Utah also experienced moderate hail damage.			
<b>Colorado Hail Storm</b>	<i>Severe Storm</i>	\$1.0B (\$1.2B)	0 Deaths
June 2018: Hailstorms in Colorado Springs and Pueblo, Colorado cause severe damage to many homes, businesses and vehicles.			
<b>Texas Hail Storm</b>	<i>Severe Storm</i>	\$1.3B (\$1.6B)	0 Deaths
June 2018: Large-hail impacts highly-populated area of the Dallas-Ft. Worth metroplex. Golfball to baseball-sized hail damages many homes, vehicles and businesses.			
<b>Central and Eastern Severe Weather</b>	<i>Severe Storm</i>	\$1.4B (\$1.7B)	5 Deaths
May 2018: Severe storm damage across many Central states including TX, KS, CO, OK, MO, IL, IN, IA and OH. This was followed by a derecho event across the Northeastern states of MD, NJ, NY, PA, VA, WV, MA and CT that caused widespread high wind damage. Also, there were one dozen tornadoes reported across PA, NY and CT causing further damage.			
<b>Central and Northeast Severe Weather</b>	<i>Severe Storm</i>	\$1.4B (\$1.7B)	0 Deaths
May 2018: Numerous central states (KS, NE, OK, TX, NM, MO, IA, IL, IN, OH, WI) were impacted by large hail and tornadoes. Several northeastern states including NY, PA and VT were also impacted by high wind damage from severe storms.			
<b>Southern and Eastern Tornadoes and Severe Weather</b>	<i>Severe Storm</i>	\$1.3B (\$1.6B)	3 Deaths
April 2018: Tornadoes and severe storms with large hail cause widespread damage across many Southern and Eastern states (AR, FL, GA, LA, MD, MI, MS, MO, NJ, NY, NC, PA, SC, TX, VA) over a multi-day period. There were over 70 confirmed tornadoes largely clustered in Louisiana, Mississippi, North Carolina and Virginia. This same system also caused winter storm impacts of high wind and ice accumulation in northeastern states.			
<b>Southeastern Tornadoes and Severe Weather</b>	<i>Severe Storm</i>	\$1.5B (\$1.8B)	0 Deaths
March 2018: A potent severe storm system caused over 20 tornadoes across Alabama and also widespread hail damage from Texas to Florida. Most notably this system produced an EF-3 tornado that caused extensive damage in Jacksonville, Alabama and across the campus of Jacksonville State University.			
<b>Northeast Winter Storm</b>	<i>Winter Storm</i>	\$2.2B (\$2.7B)	9 Deaths
March 2018: Powerful Nor'easter impacted many Northeastern states including MD, MA, NH, NJ, NY, PA, CT, DE, RA and VA. Widespread damage resulted from the combination of high winds, heavy snow and heavy coastal erosion.			
<b>Central and Eastern Winter Storm</b>	<i>Winter Storm</i>	\$1.0B (\$1.3B)	22 Deaths
January 2018: A Nor'easter caused damage across many Northeastern states including MA, NJ, NY, CT, ME, NH, PA, MD, RI, SC, TN, VA, NC and GA.			
<b>2017</b>	19 Events	\$307.2B (\$389.7B)	3,280 Deaths
<b>Western Wildfires, California Firestorm</b>	<i>Wildfire</i>	\$18.0B (\$22.9B)	54 Deaths
Summer-Fall 2017: A historic firestorm damages or destroys over 15,000 homes, businesses and other structures across California in October. The combined destruction of the Tubbs, Atlas, Nuns and Redwood Valley wildfires represent the most costly wildfire event on record, also causing 44 deaths. Extreme wildfire conditions in early December also burned hundreds of homes in Los Angeles. Numerous other wildfires across many western and northwestern states burn over 9.8 million acres exceeding the 10-year annual average of 6.5 million acres. Montana in particular was affected by wildfires that burned in excess of 1 million acres. These wildfire conditions were enhanced by the preceding drought conditions in several states.			



<b>North Dakota, South Dakota and Montana Drought</b>	<i>Drought</i>	<i>\$2.5B (\$3.2B)</i>	<i>0 Deaths</i>
Spring-Fall 2017: Extreme drought causes extensive impacts to agriculture in North Dakota, South Dakota and Montana. Field crops including wheat were severely damaged and the lack of feed for cattle forced ranchers to sell off livestock. This drought has also contributed to the increased potential for severe wildfires.			
<b>Hurricane Maria</b>	<i>Tropical Cyclone</i>	<i>\$90.0B (\$113.4B)</i>	<i>2,981 Deaths</i>
September 2017: Category 4 hurricane made landfall in southeast Puerto Rico after striking the U.S. Virgin Island of St. Croix. Maria's high winds caused widespread devastation to Puerto Rico's transportation, agriculture, communication and energy infrastructure. Extreme rainfall up to 37 inches caused widespread flooding and mudslides across the island. The interruption to commerce and standard living conditions will be sustained for a long period, as much of Puerto Rico's infrastructure is rebuilt. Maria tied Hurricane Wilma (2005) for the most rapid intensification, strengthening from tropical depression to a category 5 storm in 54 hours. Maria's landfall at Category 4 strength gives the U.S. a record three Category 4+ landfalls this year (Maria, Harvey, and Irma). Maria was one of the deadliest storms to impact the U.S., with numerous indirect deaths in the wake of the storm's devastation.			
<b>Hurricane Irma</b>	<i>Tropical Cyclone</i>	<i>\$50.0B (\$63.0B)</i>	<i>97 Deaths</i>
September 2017: Category 4 hurricane made landfall at Cudjoe Key, Florida after devastating the U.S. Virgin Islands - St John and St Thomas - as a category 5 storm. The Florida Keys were heavily impacted, as 25% of buildings were destroyed while 65% were significantly damaged. Severe wind and storm surge damage also occurred along the coasts of Florida and South Carolina. Jacksonville, FL and Charleston, SC received near-historic levels of storm surge causing significant coastal flooding. Irma maintained a maximum sustained wind of 185 mph for 37 hours, the longest in the satellite era. Irma also was a category 5 storm for longer than all other Atlantic hurricanes except Ivan in 2004.			
<b>Hurricane Harvey</b>	<i>Tropical Cyclone</i>	<i>\$125.0B (\$157.5B)</i>	<i>89 Deaths</i>
August 2017: Category 4 hurricane made landfall near Rockport, Texas causing widespread damage. Harvey's devastation was most pronounced due to the large region of extreme rainfall producing historic flooding across Houston and surrounding areas. More than 30 inches of rainfall fell on 6.9 million people, while 1.25 million experienced over 45 inches and 11,000 had over 50 inches, based on 7-day rainfall totals ending August 31. This historic U.S. rainfall caused massive flooding that displaced over 30,000 people and damaged or destroyed over 200,000 homes and businesses.			
<b>Midwest Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.4B (\$1.8B)</i>	<i>0 Deaths</i>
June 2017: Severe hail and high wind damage impacting Nebraska, Illinois and Iowa. More than one dozen tornadoes touched down across parts of Iowa, in addition to other storm damage.			
<b>Midwest Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.5B (\$1.9B)</i>	<i>0 Deaths</i>
June 2017: Severe hail, high winds and numerous tornadoes impact many states over several days including WY, TX, NE, KS, MO, IA, IL, PA, VA, NY.			
<b>Minnesota Hail Storm and Upper Midwest Severe Weather</b>	<i>Severe Storm</i>	<i>\$2.4B (\$3.0B)</i>	<i>0 Deaths</i>
June 2017: Severe hail and high winds cause considerable damage across Minnesota and Wisconsin. The Minneapolis metro area in particular was damaged from large, destructive hail impacting many buildings and vehicles. This damage is comparable to the May 15, 1998 Minnesota hail storm that was also very costly.			
<b>North Central Severe Weather and Tornadoes</b>	<i>Severe Storm</i>	<i>(\$1.2B)*</i>	<i>1 Death</i>
May 2017: Severe weather and tornadoes cause impacts across numerous north central states. The states most impacted were Iowa, Illinois, Minnesota, and Wisconsin.			
<b>Colorado Hail Storm and Central Severe Weather</b>	<i>Severe Storm</i>	<i>\$3.4B (\$4.3B)</i>	<i>0 Deaths</i>
May 2017: Hail storm and wind damage impacting several states including CO, OK, TX, NM, MO. The most costly impacts were in the Denver metro region where baseball-sized hail caused the most expensive hail storm in Colorado history, with insured losses exceeding \$2.2 (\$2.8) billion.			
<b>Missouri and Arkansas Flooding and Central Severe Weather</b>	<i>Flooding</i>	<i>\$1.7B (\$2.1B)</i>	<i>20 Deaths</i>
May 2017: A period of heavy rainfall up to 15 inches over a multi-state region in the Midwest caused historic levels of flooding along many rivers. The flooding was most severe in Missouri, Arkansas and southern Illinois where levees were breached and towns were flooded. There was widespread damage to homes, businesses, infrastructure and agriculture. Severe storms also caused additional impacts during the flooding event across a number of central and southern states.			
<b>South and Southeast Severe Weather</b>	<i>Severe Storm</i>	<i>(\$1.1B)*</i>	<i>0 Deaths</i>



April 2017: Severe weather including hail, high winds and several tornadoes impacted Oklahoma, Texas, Tennessee, South Carolina, North Carolina and Virginia. These conditions caused damage to homes, businesses, vehicles and other infrastructure.

**Southeast Severe Weather and Tornadoes** *Severe Storm* \$1.0B (\$1.2B) 1 Death

April 2017: Severe weather and tornadoes impact numerous southern and eastern states. The states most impacted include Alabama, Georgia and Kentucky.

**South/Southeast Severe Weather** *Severe Storm* \$2.7B (\$3.4B) 0 Deaths

March 2017: Large hail and high winds in Texas north of the Dallas metro region caused widespread damage to structures and vehicles. Severe storms also caused damage across several other states (OK, TN, KY, MS, AL) due to the combination of high winds, hail and tornadoes.

**Southeast Freeze** *Freeze* \$1.0B (\$1.3B) 0 Deaths

March 2017: Severe freeze heavily damaged fruit crops across several southeastern states (SC, GA, NC, TN, AL, MS, FL, KY, VA). Mid-March freezes are not climatologically unusual in the Southeast, however many crops were blooming 3+ weeks early due to unusually warm temperatures during the preceding weeks. Damage was most severe in Georgia and South Carolina. Crops most impacted include peaches, blueberries, strawberries and apples, among others.

**Midwest Tornado Outbreak** *Severe Storm* \$2.2B (\$2.8B) 2 Deaths

March 2017: Tornado outbreak and wind damage across many Midwestern states (AR, IA, IL, KS, MI, MN, MO, NE, NY, OH, WI). Missouri and Illinois were impacted by numerous tornadoes while Michigan and New York were affected by destructive, straight-line winds following the storm system. Nearly one million customers lost power in Michigan alone due to sustained high winds, which affected several states from Illinois to New York.

**Central/Southeast Tornado Outbreak** *Severe Storm* \$1.8B (\$2.3B) 6 Deaths

March 2017: Over 70 tornadoes developed during a widespread outbreak across many central and southern states causing significant damage. There was also widespread straight-line wind and hail damage. This was the second largest tornado outbreak to occur early in 2017.

**California Flooding** *Flooding* \$1.5B (\$1.9B) 5 Deaths

February 2017: Heavy, persistent rainfall across northern and central California created substantial property and infrastructure damage from flooding, landslides and erosion. Notable impacts include severe damage to the Oroville Dam spillway, which caused a multi-day evacuation of 188,000 residents downstream. Excessive rainfall also caused flood damage in the city of San Jose, as Coyote Creek overflowed its banks and inundated neighborhoods forcing 14,000 residents to evacuate.

**Southern Tornado Outbreak and Western Storms** *Severe Storm* \$1.1B (\$1.4B) 24 Deaths

January 2017: High wind damage occurred across southern California near San Diego followed by 79 confirmed tornadoes during an outbreak across many southern states including AL, FL, GA, LA, MS, SC and TX. This was the 3rd most tornadoes to occur in a single outbreak of extreme weather during a winter month (Dec.-Feb.) based on records from 1950.

**2016** 15 Events \$46.3B (\$60.2B) 138 Deaths

**Western/Southeast Wildfires** *Wildfire* \$2.4B (\$3.1B) 21 Deaths

Summer-Fall 2016: Western and Southern states experienced an active wildfire season with over 5.0 million acres burned nationally. Most notable was the firestorm that impacted Gatlinburg, Tennessee with hurricane-force wind gusts in extremely dry conditions creating volatile wildfire behavior. These wildfires destroyed nearly 2,500 structures and caused 14 fatalities. The drought conditions in many areas of the Southeast and California worsened the wildfire potential.

**West/Northeast/Southeast Drought** *Drought* \$3.4B (\$4.5B) 0 Deaths

2016: California's 5-year drought persisted during 2016 while new areas of extreme drought developed in states across the Northeast and Southeast. The long-term impacts of the drought in California have damaged forests where 100+ million trees have perished and are a public safety hazard. The agricultural impacts were reduced in California as water prices and crop following declined. However, agricultural impacts developed in Northeast and Southeast due to stressed water supplies.

**Hurricane Matthew** *Tropical Cyclone* \$10.0B (\$12.8B) 49 Deaths

October 2016: Category 1 hurricane made landfall in North Carolina, after it paralleled the Southeast coast along Florida, Georgia and the Carolinas causing widespread damage from wind, storm surge and inland flooding. The most costly impacts were due to historic



levels of river flooding in eastern North Carolina where 100,000 homes, businesses and other structures were damaged. This inland flooding was comparable to Hurricane Floyd (1999) that also impacted eastern North Carolina. Matthew narrowly missed landfall on Florida's east coast as a powerful category 4 storm.

<b>Louisiana Flooding</b>	<i>Flooding</i>	<i>\$10.0B (\$13.1B)</i>	<i>13 Deaths</i>
August 2016: A historic flood devastated a large area of southern Louisiana resulting from 20 to 30 inches of rainfall over several days. Watson, Louisiana received an astounding 31.39 inches of rain from the storm. Two-day rainfall totals in the hardest hit areas have a 0.2% chance of occurring in any given year: a 1 in 500 year event. More than 30,000 people were rescued from the floodwaters that damaged or destroyed over 50,000 homes, 100,000 vehicles and 20,000 businesses. This is the most damaging U.S. flood event since Superstorm Sandy impacted the Northeast in 2012.			
<b>Rockies and Northeast Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.5B (\$1.9B)</i>	<i>0 Deaths</i>
July 2016: Severe storms across the Rockies and Northeastern states (CO, WY, VA, MD, PA, NJ, NY) caused large hail and high wind damage. Storm damage in Colorado was the most costly due to hail.			
<b>West Virginia Flooding and Ohio Valley Tornadoes</b>	<i>Flooding</i>	<i>\$1.0B (\$1.3B)</i>	<i>23 Deaths</i>
June 2016: Torrential rainfall caused destructive flooding through many West Virginia towns, damaging thousands of homes and businesses and causing considerable loss of life. Over 1,500 roads and bridges were damaged or destroyed making the impact on infrastructure comparable to the historic 2013 Colorado flood. The storm system also produced numerous tornadoes causing damage across several Ohio Valley states.			
<b>Rockies/Central Tornadoes and Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.1B (\$1.5B)</i>	<i>0 Deaths</i>
May 2016: Sustained period of severe thunderstorms and tornadoes affecting several states including Montana, Colorado, Kansas, Missouri and Texas. The most concentrated days for tornado development were on May 22 and 24. Additional damage was created by straight-line high wind and hail damage.			
<b>Plains Tornadoes and Central Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.7B (\$2.2B)</i>	<i>2 Deaths</i>
May 2016: Tornadoes and severe storms cause widespread damage across the Plains and Central states (NE, MO, TX, OK, KS, CO, IL, KY, TN) over a multi-day period. The damage from tornadoes and high wind was most costly in Nebraska and Missouri.			
<b>South/Southeast Tornadoes</b>	<i>Severe Storm</i>	<i>\$2.4B (\$3.1B)</i>	<i>6 Deaths</i>
April 2016: Large outbreak of tornadoes affects numerous states across the South and Southeast. Additional damage also from large hail and straight-line wind during the multi-day thunderstorm event.			
<b>Houston Flooding</b>	<i>Flooding</i>	<i>\$2.7B (\$3.5B)</i>	<i>8 Deaths</i>
April 2016: A period of extreme rainfall up to 17 inches created widespread urban flooding in Houston and surrounding suburbs. Thousands of homes and businesses were damaged and more than 1,800 high water rescues were conducted. This represents the most widespread flooding event to affect Houston since Tropical Storm Allison in 2001.			
<b>North/Central Texas Hail Storm</b>	<i>Severe Storm</i>	<i>\$3.5B (\$4.5B)</i>	<i>0 Deaths</i>
April 2016: Widespread severe hail damage across north and central Texas including the cities of Plano, Wylie, Frisco, Allen and San Antonio. The damage in San Antonio was particularly severe as the National Weather Service verified reports of hail size reaching 4.5 inches in diameter. This ranks as one of the most costly hail events to affect the United States.			
<b>North Texas Hail Storm</b>	<i>Severe Storm</i>	<i>\$2.1B (\$2.7B)</i>	<i>0 Deaths</i>
March 2016: Large hail and strong winds caused considerable damage in heavily populated areas of north Texas. This damage was most notable in the cities of Dallas, Fort Worth and Plano.			
<b>Southern Severe Weather</b>	<i>Severe Storm</i>	<i>\$1.2B (\$1.6B)</i>	<i>1 Death</i>
March 2016: Severe hail impacts the Fort Worth and Arlington metro region in Texas. Additional large hail and high wind damage occurred in other locations of Texas, Louisiana and Mississippi.			
<b>Texas and Louisiana Flooding</b>	<i>Flooding</i>	<i>\$2.3B (\$3.0B)</i>	<i>5 Deaths</i>
March 2016: Multiple days of heavy rainfall averaging 15 to 20 inches led to widespread flooding along the Sabine River basin on the Texas and Louisiana border. This prompted numerous evacuations, high-water rescues and destruction, as more than 1,000 homes and businesses were damaged or destroyed.			
<b>Southeast and Eastern Tornadoes</b>	<i>Severe Storm</i>	<i>\$1.0B (\$1.4B)</i>	<i>10 Deaths</i>



February 2016: Early outbreak of tornadoes and severe weather across many southern and eastern states including (AL, CT, FL, GA, LA, MA, MD, MS, NC, NJ, NY, PA, SC, TX, VA). There were at least 50 confirmed tornadoes causing widespread damage.

**2015** 11 Events      \$22.4B (\$30.3B)      158 Deaths

**Western Drought** Drought      \$4.5B (\$5.9B)      0 Deaths

2015: Drought conditions were present across numerous western states (CA, NV, OR, WA, ID, MT, UT, AZ) with the most severe conditions continuing to plague California for all of 2015. The agriculture sector was again impacted by a lack of rainfall resulting in hundreds of thousands of acres of farmland remaining fallow and requiring excess groundwater pumping to irrigate existing agriculture interests. Wildfire conditions were further enhanced by the ongoing drought. California experienced extensive damage from both drought and wildfire impacts. Drought conditions did improve dramatically across Texas and Oklahoma, in the form of several major flood events.

**Texas Tornadoes and Midwest Flooding** Severe Storm      \$2.0B (\$2.6B)      50 Deaths

December 2015: A powerful storm system packing unseasonably strong tornadoes caused widespread destruction in the Dallas metropolitan region, damaging well over 1,000 homes and businesses. This same potent system also produced intense rainfall over several Midwestern states triggering historic flooding that has approached or broken records at river gauges in several states (MO, IL, AR, TN, MS, LA). The flooding has overtopped levees and caused damage in numerous areas. This historic storm also produced high wind, snow and ice impacts from New Mexico through the Midwest and into New England. Overall, the storm caused at least 50 deaths from the combined impact of tornadoes, flooding and winter weather.

**Western and Alaskan Wildfires** Wildfire      \$3.0B (\$3.9B)      12 Deaths

Summer-Fall 2015: Wildfires burned over 10.1 million acres across the U.S. in 2015, surpassing 2006 for the highest annual total of U.S. acreage burned since record-keeping began in 1960. The most costly wildfires occurred in California where over 2,500 structures were destroyed due to the Valley and Butte wildfires with the insured losses alone exceeding \$1.0 (\$1.3) billion. The most extensive wildfires occurred in Alaska where over 5 million acres burned within the state. There was extensive burnt acreage across other western states, most notably (OR, WA, ID, MT, ND, CO, WY, TX).

**South Carolina and East Coast Flooding** Flooding      \$2.0B (\$2.6B)      25 Deaths

October 2015: Historic levels of flooding impacted South Carolina causing widespread damage to many homes, businesses, public buildings and infrastructure. This interrupted commerce and closed major transportation corridors (such as I-95) for weeks as rivers slowly receded. Locally extreme rainfall totals exceeding 20-inches were common resulting from the convergence of a powerful low pressure system / frontal boundary and copious moisture from Hurricane Joaquin in the Atlantic.

**Central and Northeast Severe Weather** Severe Storm      \$1.2B (\$1.5B)      1 Death

June 2015: Severe storms across numerous Central and Northeast states (CO, CT, IA, IL, MD, MI, NJ, NY, PA, SD, VA, WI) with widespread hail and high wind damage.

**Texas and Oklahoma Flooding and Severe Weather** Flooding      \$2.5B (\$3.3B)      31 Deaths

May 2015: A slow-moving system caused tremendous rainfall and subsequent flooding to occur in Texas and Oklahoma. The Blanco river in Texas swelled from 5 feet to a crest of more than 40 feet over several hours causing considerable property damage and loss of life. The city of Houston also experienced flooding which resulted in hundreds of high-water rescues. The damage in Texas alone exceeded \$1.0 (\$1.3) billion. There was also damage in other states (KS, CO, AR, OH, LA, GA, SC) from associated severe storms.

**Southern Plains Tornadoes** Severe Storm      \$1.3B (\$1.7B)      4 Deaths

May 2015: Tornado outbreak across the Southern Plain states (IA, KS, NE, OK, CO, SD, TX) with 122 tornadoes. The most costly damage occurred across Texas and Oklahoma.

**South and Southeast Severe Weather** Severe Storm      (\$1.2B)\*      3 Deaths

April 2015: Severe weather produced tornadoes, large hail and high wind damage across numerous southern and southeastern states including Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi and Texas. These storms caused widespread impacts to many homes, vehicles and businesses.

**South/Southeast Severe Weather** Severe Storm      \$1.3B (\$1.7B)      0 Deaths

April 2015: Severe storms across the South and Southeastern states (AL, AR, FL, GA, KS, LA, MS, NC, OK, SC, TN, TX). High winds and severe hail created the most significant damage in Texas.

**Midwest/Ohio Valley Severe Weather** Severe Storm      \$1.6B (\$2.0B)      2 Deaths



April 2015: Severe storms across the Midwest and Ohio Valley including the states (AR, IA, IL, IN, KS, KY, MI, MO, NC, OH, OK, PA, TN, TX, WI, WV). Large hail and high winds created the most damage across Missouri and Illinois.

**Central and Eastern Winter storm, Cold Wave** *Winter Storm* \$3.0B (\$3.9B) 30 Deaths

February 2015: A large winter storm and associated cold wave impacted many central, eastern and northeastern states (CT, DE, GA, IL, KY, MA, MD, ME, MI, NC, NH, NJ, NY, OH, PA, RI, SC, TN, VA). The city of Boston was particularly impacted as feet of snow continued to accumulate causing load-stress on buildings and clogging transportation corridors. Total, direct losses in Massachusetts alone exceed \$1.0 (\$1.3) billion for this event, with considerable damage in many other states.

**2014** 10 Events \$17.3B (\$25.1B) 53 Deaths

**Western Drought** *Drought* \$4.0B (\$5.3B) 0 Deaths

2014: Historic drought conditions affected the majority of California for all of 2014 making it the worst drought on record for the state. Surrounding states and parts of Texas, Oklahoma and Kansas also experienced continued severe drought conditions. This is a continuation of drought conditions that have persisted for several years.

**Rockies/Plains Severe Weather** *Severe Storm* \$1.4B (\$1.8B) 0 Deaths

September 2014: Severe storms across the Rockies and Plains states (CO, KS, TX). Large hail and high winds created significant damage across eastern Colorado and Texas, particularly in the Dallas metro area.

**Michigan and Northeast Flooding** *Flooding* \$1.0B (\$1.3B) 2 Deaths

August 2014: Heavy rainfall in excess of 5 inches caused significant flooding in cities across Michigan damaging thousands of cars, business, homes and other infrastructure. Flooding also occurred across Maryland and New York's Long Island, as the slow-moving storm system delivered 24-hour rainfall exceeding 6 and 12 inches, respectively, creating more flood damage. Islip, NY received 13.57 inches of rain over a 24-hour period on Aug 12-13 setting a new 24-hour precipitation record for New York.

**Rockies/Central Plains Severe Weather** *Severe Storm* \$1.9B (\$2.5B) 2 Deaths

June 2014: Severe storms across the Rockies and Central Plains states (NE, KS, WY, IA, AR). Wind gusts exceeding 90 mph and baseball to softball sized hail caused severe damage to structures and vehicles in central and eastern Nebraska.

**Rockies/Midwest/Eastern Severe Weather** *Severe Storm* \$3.7B (\$4.8B) 0 Deaths

May 2014: Severe storms across the Rockies, Midwest and Eastern states (CO, MT, IA, IL, IN, OH, SC, VA, PA, DE, NY) with the most costly damage in Colorado, Illinois and Pennsylvania.

**Center Severe Weather** *Severe Storm* (\$1.1B)\* 0 Deaths

May 2014: Severe weather including damaging hail, high winds and more than 50 tornadoes impacted Kansas, Nebraska, Missouri, Illinois, Indiana, Ohio and West Virginia. These impacts caused damage to homes, businesses, vehicles and other infrastructure.

**Midwest/Southeast/Northeast Tornadoes and Flooding** *Severe Storm* \$1.7B (\$2.3B) 33 Deaths

April 2014: Tornado outbreak across the Midwest, Southeast and Northeast states (AL, AR, DE, FL, GA, KS, MD, MO, MS, NC, NJ, NY, PA, TN, VA) with 83 confirmed tornadoes. Mississippi had its 3rd greatest number of tornadoes reported for any day since 1950. Torrential rainfall in the Florida panhandle also caused major flooding, as Pensacola set new 1-day and 2-day precipitation records of 15.55 and 20.47 inches, respectively. Flooding rains were also reported in coastal Alabama, as Mobile received 11.24 inches of rain, the third greatest calendar day rainfall total for the city.

**Central Severe Weather** *Severe Storm* (\$1.2B)\* 0 Deaths

April 2014: Severe weather produced hail and high wind damage across several central states including Illinois, Iowa, Michigan, Wisconsin and Texas. The damage was most focused in Illinois and Michigan, as storms caused impacts to many homes, vehicles and businesses.

**Plains Severe Weather** *Severe Storm* \$1.4B (\$1.9B) 0 Deaths

April 2014: Severe storms across the Plains states (IL, KS, MO, TX) causing considerable hail and wind damage in Texas.

**Midwest/Southeast/Northeast Winter Storm** *Winter Storm* \$2.2B (\$2.9B) 16 Deaths

January 2014: Winter storm caused widespread damage across numerous Midwest, Southeast and Northeastern states (AL, GA, IL, IN, KY, MD, MI, MO, MS, NC, NJ, NY, OH, PA, SC, TN, VA).



**2013** 10 Events    \$22.7B (\$31.8B)    114 Deaths

**Western/Plains Drought/Heat Wave** Drought    \$10.4B (\$14.1B)    53 Deaths

Spring-Fall 2013: The 2013 drought slowly dissipated from the historic levels of the 2012 drought, as conditions improved across many Midwestern and Plains states. However, moderate to extreme drought did remain or expand into western states (AZ, CA, CO, IA, ID, IL, KS, MI, MN, MO, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WI, WY). In comparison to 2011 and 2012 drought conditions the US experienced only moderate crop losses across the central agriculture states.

**Ohio Valley Tornadoes** Severe Storm    \$1.1B (\$1.5B)    8 Deaths

November 2013: Late-season outbreak of tornadoes and severe weather over the Ohio Valley (IL, IN, KY, MI, MO, OH) with 70 confirmed tornadoes. Most severe impacts occurred across Illinois and Indiana.

**Colorado Flooding** Flooding    \$1.5B (\$2.0B)    9 Deaths

September 2013: A stalled frontal boundary over Colorado led to record rainfall, as some areas received > 15 inches over several days. This resulted in historic flooding across numerous cities and towns. Destruction of residences, businesses and transportation infrastructure was widespread.

**Midwest Severe Weather** Severe Storm    \$1.0B (\$1.4B)    0 Deaths

August 2013: Severe weather and large hail causes considerable damage across Minnesota and Wisconsin.

**Midwest/Plains/Northeast Tornadoes** Severe Storm    \$1.8B (\$2.4B)    10 Deaths

May 2013: Outbreak of tornadoes and severe weather over the Midwest, Plains and Northeast (IL, IN, KS, MO, NY, OK, TX) with 92 confirmed tornadoes including the deadly tornado that struck El Reno, OK. There was also significant damage resulting from hail and straight-line wind.

**Midwest/Plains/East Tornadoes** Severe Storm    \$2.4B (\$3.2B)    27 Deaths

May 2013: Outbreak of tornadoes and severe weather over the Midwest, Plains and Eastern states (GA, IA, IL, KS, MO, NY, OK, TX) with 59 confirmed tornadoes including the deadly tornado that impacted Moore, OK. Many destructive tornadoes remained on the ground for an extended time.

**Illinois Flooding and Severe Weather** Flooding    \$1.1B (\$1.4B)    4 Deaths

April 2013: A slow-moving storm system created rainfall totals of 5 to 10 inches across northern and central Illinois including the Chicago metro. This resulted in damage to many homes and businesses. There was also severe weather damage from wind and hail across Indiana and Missouri.

**Midwest/Plains Severe Weather** Severe Storm    \$1.4B (\$1.9B)    1 Death

April 2013: Severe weather across the Midwest and Plains states (IN, KS, MO, NE) with a total of 26 confirmed tornadoes. Considerable damage resulting from hail and straight-line wind.

**Southeast Severe Weather** Severe Storm    \$2.0B (\$2.7B)    1 Death

March 2013: Severe weather over the Southeast (MS, AL, GA, TN) with 10 confirmed tornadoes. Considerable damage resulting from large hail and straight-line wind.

**Southern Severe Weather** Severe Storm    (\$1.2B)\*    1 Death

February 2013: Severe weather produced severe hail and wind damage across several southern states including Louisiana, Oklahoma and Texas. The damage was most focused in Louisiana near New Orleans, as severe hail caused significant damage costs to many homes, vehicles and businesses.

**2012** 11 Events    \$115.8B (\$156.3B)    377 Deaths

**U.S. Drought/Heat Wave** Drought    \$30.0B (\$41.1B)    123 Deaths

2012: The 2012 drought is the most extensive drought to affect the U.S. since the 1930s. Moderate to extreme drought conditions affected more than half the country for a majority of 2012. The following states were affected: CA, NV, ID, MT, WY, UT, CO, AZ, NM, TX, ND, SD, NE, KS, OK, AR, MO, IA, MN, IL, IN, GA. Costly drought impacts occurred across the central agriculture states resulting in widespread harvest failure for corn, sorghum and soybean crops, among others. The associated summer heat wave also caused 123 direct deaths, but an estimate of the excess mortality due to heat stress is still unknown.



**Western Wildfires** *Wildfire* \$1.7B (\$2.3B) 8 Deaths

Summer-Fall 2012: Wildfires burned over 9.2 million acres across the U.S. in 2012. This is the 3rd highest annual total since the year 2000. The most damaging wildfires occurred in the western states (CO, ID, WY, MT, CA, NV, OR, WA). Colorado experienced the most costly wildfires (e.g., Waldo Canyon fire) where several hundred residences were destroyed.

**Hurricane Sandy** *Tropical Cyclone* \$65.0B (\$87.2B) 159 Deaths

October 2012: Extensive damage across several northeastern states (MD, DE, NJ, NY, CT, MA, RI) due to high wind and coastal storm surge, particularly NY and NJ. Damage from wind, rain and heavy snow also extended more broadly to other states (NC, VA, WV, OH, PA, NH), as Sandy merged with a developing Nor'easter. Sandy's impact on major population centers caused widespread interruption to critical water / electrical services and also caused 159 deaths (72 direct, 87 indirect). Sandy also caused the New York Stock Exchange to close for two consecutive business days, which last happened in 1888 due to a major winter storm.

**Hurricane Isaac** *Tropical Cyclone* \$2.8B (\$3.7B) 9 Deaths

August 2012: Category 1 hurricane made landfall over Louisiana. Isaac's slow motion and large size led to a large storm surge and flooding rains. This created damage across several southeastern states (LA, MS, AL, FL) including 9 deaths (5 direct, 4 indirect).

**Plains/East/Northeast Derecho** *Severe Storm* \$2.9B (\$3.9B) 28 Deaths

June-July 2012: Sustained outbreak of thunderstorms / high winds from a strong derecho event over the central, eastern, and northeastern states (IL, IN, KY, OH, WV, SC, NC, VA, MD, DC, NJ).

**Rockies/Southwest Severe Weather** *Severe Storm* \$2.6B (\$3.5B) 0 Deaths

June 2012: Severe storms and damaging hail over several states (CO, NM, TX) with 25 confirmed tornadoes. Colorado experienced over \$1.0 (\$1.4) billion in damage due to hail.

**Southern Plains/Midwest/Northeast Severe Weather** *Severe Storm* \$2.3B (\$3.1B) 1 Death

May 2012: Severe storms over the southern plains, midwest and northeast (TX, OK, KS, MN, PA, NY) with 27 confirmed tornadoes. Significant damage also from severe hail and straight-line winds.

**Midwest/Ohio Valley Severe Weather** *Severe Storm* \$3.3B (\$4.4B) 1 Death

April-May 2012: Severe weather over the midwest and Ohio Valley (TX, OK, KS, MO, IL, IN, KY) with 38 confirmed tornadoes. Considerable damage resulting from hail.

**Midwest Tornadoes** *Severe Storm* \$1.1B (\$1.5B) 6 Deaths

April 2012: Outbreak of tornadoes and severe weather over the midwest (OK, KS, NE, IA) with 98 confirmed tornadoes including many tornadoes that remained on the ground for an extended time - traveling tens of miles.

**Texas Tornadoes** *Severe Storm* \$1.0B (\$1.4B) 0 Deaths

April 2012: Outbreak of tornadoes across the greater Dallas-Ft. Worth metropolitan area. Several moderate strength tornadoes (EF-2 and EF-3) affected towns in this area with a total of 22 confirmed tornadoes.

**Southeast/Ohio Valley Tornadoes** *Severe Storm* \$3.1B (\$4.2B) 42 Deaths

March 2012: Outbreak of tornadoes and severe weather over the southeast and Ohio Valley (AL, GA, IN, OH, KY, TN) with 75 confirmed tornadoes.

**2011** 18 Events \$67.9B (\$96.3B) 765 Deaths

**Texas, New Mexico, Arizona Wildfires** *Wildfire* \$1.8B (\$2.5B) 5 Deaths

Summer-Fall 2011: Continued drought conditions and periods of extreme heat provided conditions favorable for a series of historic wildfires across Texas, New Mexico and Arizona. The Bastrop Fire in Texas was the most destructive fire in Texas history destroying over 1,500 homes. The Wallow Fire consumed over 500,000 acres in Arizona making it the largest on record in Arizona. The Las Conchas Fire in New Mexico was also the state's largest wildfire on record scorching over 150,000 acres while threatening the Los Alamos National Laboratory. Over 3 million acres have burned across Texas this wildfire season.

**Northeastern Winter Storm** *Winter Storm* (\$1.3B)\* 1 Death

October 2011: Winter storm impacts northeastern states including Connecticut, Massachusetts, New Hampshire, New York, New Jersey and Pennsylvania.



**Tropical Storm Lee***Tropical Cyclone* \$2.5B (\$3.4B)

21 Deaths

September 2011: Wind and flood damage across the southeast (LA, MS, AL, GA, TN) but considerably more damage from record flooding across the northeast (PA, NY, NJ, CT, VA, MD). Pennsylvania and New York were most affected.

**Southern Plains/Southwest Drought and Heat Wave***Drought*

\$12.0B (\$16.9B)

95 Deaths

Spring-Summer 2011: Drought and heat wave conditions created major impacts across Texas, Oklahoma, New Mexico, Arizona, southern Kansas, and western Louisiana. In Texas and Oklahoma, a majority of range and pastures were classified in "very poor" condition for much of the 2011 crop growing season.

**Hurricane Irene***Tropical Cyclone* \$13.5B (\$18.5B)

45 Deaths

August 2011: Category 1 hurricane made landfall over coastal NC and moved northward along the Mid-Atlantic Coast (NC, VA, MD, NJ, NY, CT, RI, MA, VT) causing torrential rainfall and flooding across the Northeast. Wind damage in coastal NC, VA, and MD was moderate with considerable damage resulting from falling trees and power lines, while flooding caused extensive flood damage across NJ, NY, and VT. Over seven million homes and businesses lost power during the storm. Numerous tornadoes were also reported in several states further adding to the damage.

**Midwest/Southeast Severe Weather***Severe Storm*

\$1.2B (\$1.6B)

0 Deaths

August 17-18, 2011: Severe weather impacts the states IA, KS, MO, NE, SD across the Midwest and Southeast.

**Rockies and Midwest Derecho***Severe Storm*

\$1.2B (\$1.7B)

2 Deaths

July 10-11, 2011: A derecho produced a wide swath of high wind damage beginning east of the Rockies and across the central plains (CO, IA, IL, MI, MN, OH).

**North Central Severe Weather***Severe Storm*

(\$1.2B)\*

0 Deaths

July 1, 2011: Severe weather causes damage across several north central states. The regions most impacted were southern Minnesota, western Wisconsin and northern Illinois.

**Missouri River flooding***Flooding*

\$2.0B (\$2.8B)

5 Deaths

May-June 2011: Melting of an above-average snow pack across the Northern Rocky Mountains combined with above-average precipitation caused the Missouri and Souris Rivers to swell beyond their banks across the Upper Midwest (MT, ND, SD, NE, IA, KS, MO). An estimated 11,000 people were forced to evacuate Minot, North Dakota due to the record high water level of the Souris River, where 4,000 homes were flooded. Numerous levees were breached along the Missouri River, flooding thousands of acres of farmland.

**Midwest/Southeast Tornadoes and Severe Weather***Severe Storm*

\$1.5B (\$2.1B)

3 Deaths

June 2011: Outbreak of tornadoes over central states (OK, TX, KS, NE, MO, IA, IL) with an estimated 81 tornadoes. Additional wind and hail damage across the Southeast (TN, GA, NC, SC).

**Mississippi River flooding***Flooding*

\$3.0B (\$4.2B)

7 Deaths

April-May 2011: Persistent rainfall (nearly 300 percent normal precipitation amounts in the Ohio Valley) combined with melting snowpack caused historical flooding along the Mississippi River and its tributaries. Examples of economic damage include: \$500 (\$705.0) million to agriculture in Arkansas; \$320 (\$451.2) million in damage to Memphis, Tennessee; \$800 million (\$1.1 billion) to agriculture in Mississippi; \$317 (\$447.0) million to agriculture and property in Missouri's Birds Point-New Madrid Spillway; \$80 (\$112.8) million for the first 30 days of flood fighting efforts in Louisiana.

**Midwest/Southeast Tornadoes***Severe Storm*

\$9.1B (\$12.5B)

177 Deaths

May 2011: Outbreak of tornadoes over central and southern states (MO, TX, OK, KS, AR, GA, TN, VA, KY, IN, IL, OH, WI, MN, PA) with an estimated 180 tornadoes. Notably, an EF-5 tornado struck Joplin, MO resulting in at least 160 deaths, making it the deadliest single tornado to strike the U.S. since modern tornado record keeping began in 1950.

**Southeast/Ohio Valley/Midwest Tornadoes***Severe Storm*

\$10.2B (\$14.1B)

321 Deaths

April 2011: Outbreak of tornadoes over central and southern states (AL, AR, LA, MS, GA, TN, VA, KY, IL, MO, OH, TX, OK) with an estimated 343 tornadoes. The deadliest tornado of the outbreak, an EF-5, hit northern Alabama, killing 78 people. Several major metropolitan areas were directly impacted by strong tornadoes including Tuscaloosa, Birmingham, and Huntsville in Alabama and Chattanooga, Tennessee, causing the estimated damage costs to soar.

**Ohio Valley Derecho and Southern Tornadoes***Severe Storm*

\$1.0B (\$1.4B)

0 Deaths

April 2011: Dozens of tornadoes and a derecho affect numerous states (AR, IL, IN, KY, MO, OH, TN, TX) across the Ohio Valley and



South.			
<b>Midwest/Southeast Tornadoes</b>	<i>Severe Storm</i>	\$2.1B (\$2.8B)	38 Deaths
April 2011: Outbreak of tornadoes over central and southern states (OK, TX, AR, MS, AL, GA, NC, SC, VA, PA) with an estimated 177 tornadoes.			
<b>Southeast/Midwest Tornadoes</b>	<i>Severe Storm</i>	\$2.2B (\$3.0B)	0 Deaths
April 2011: Outbreak of tornadoes over central and southern states (NC, SC, TN, AL, TX, OK, KS, IA, WI) with an estimated 59 tornadoes.			
<b>Midwest/Southeast Tornadoes and Derecho</b>	<i>Severe Storm</i>	\$2.8B (\$3.8B)	9 Deaths
April 2011: Outbreak of tornadoes and derecho over central and southern states (KS, MO, IA, IL, WI, KY, GA, TN, NC, SC) with an estimated 46 tornadoes.			
<b>Groundhog Day Blizzard</b>	<i>Winter Storm</i>	\$1.8B (\$2.5B)	36 Deaths
February 2011: A large winter storm impacted many central, eastern and northeastern states. The city of Chicago was brought to a virtual standstill as between 1 and 2 feet of snow fell over the area.			
<b>2010</b>	7 Events	\$11.2B (\$19.7B)	51 Deaths
<b>Arizona Severe Weather</b>	<i>Severe Storm</i>	\$3.8B (\$5.4B)	0 Deaths
October 2010: An unusual series of severe thunderstorms across Arizona produced numerous tornadoes and widespread, severe hail damage. Over one-hundred buildings were damaged or destroyed by tornadoes while thousands of automobiles and buildings were damaged by large hail across Phoenix and surrounding cities.			
<b>Midwest/Northeast Severe Storms and Flooding</b>	<i>Severe Storm</i>	(\$1.3B)*	0 Deaths
July 2010: Severe storms and flooding affect the states IA, IL, MD, NY, PA, WI across the Midwest and Northeast.			
<b>Rockies/Central/East Severe Weather</b>	<i>Severe Storm</i>	(\$1.3B)*	2 Deaths
June 2010: Severe storms cause high wind and hail damage across numerous states including CO, NM, KS, OK, IL, IN, GA, SC and NC.			
<b>Oklahoma, Kansas, and Texas Tornadoes and Severe Weather</b>	<i>Severe Storm</i>	\$3.3B (\$4.7B)	3 Deaths
May 2010: An outbreak of tornadoes, hail, and severe thunderstorms occurred across Oklahoma, Kansas, and Texas in mid-May. Oklahoma was hardest hit with > \$1.5 (\$2.1) billion in damages.			
<b>East/South Flooding and Severe Weather</b>	<i>Flooding</i>	\$2.3B (\$3.2B)	32 Deaths
May 2010: Flooding, hail, tornadoes, and severe thunderstorms occurred across many Southern states (TN, AR, KY, GA) on April 30-May 2. Flooding in the Nashville, TN area alone contributed > \$1.0 (\$1.4) billion in damages. Western and Middle Tennessee were hardest hit with local rainfall amounts of 18-20 inches to the south and west of Greater Nashville.			
<b>Northeast Flooding</b>	<i>Flooding</i>	\$1.8B (\$2.6B)	11 Deaths
March 2010: Heavy rainfall over portions of the Northeast in late March caused extensive flooding across several states (RI, CT, MA, NJ, NY, PA). The event caused the worst flooding in Rhode Island's history.			
<b>Northeast Winter Storm</b>	<i>Winter Storm</i>	(\$1.2B)*	3 Deaths
February 2010: Winter storm produced 10-20 inches of snow and high wind impacts across numerous northeastern and eastern states including Pennsylvania, Maryland, Delaware, New Jersey, West Virginia, Virginia and North Carolina. These impacts were most focused in Pennsylvania and Maryland, as this winter storm closely followed a previous winter storm from the week prior.			
<b>2009</b>	9 Events	\$11.5B (\$19.4B)	43 Deaths
<b>Southwest/Great Plains Drought</b>	<i>Drought</i>	\$3.5B (\$5.1B)	0 Deaths
2009: Drought conditions occurred during much of the year across parts of the Southwest, Great Plains, and southern Texas causing agricultural losses in numerous states (TX, OK, KS, CA, NM, AZ). The largest agriculture losses occurred in TX and CA.			



<b>Western Wildfires</b>	<i>Wildfire</i>	\$1.0B (\$1.5B)	10 Deaths
Summer-Fall 2009: Residual and sustained drought conditions across western and south-central states resulted in thousands of wildfires. Most affected states include CA, AZ, NM, TX, OK, and UT. National wildfire acreage burned exceeds 5.9 million acres. Over 200 homes and structures destroyed in the California "Station" fire alone.			
<b>Georgia Flooding</b>	<i>Flooding</i>	(\$1.3B)*	10 Deaths
September 2009: Severe multi-day flooding across numerous Georgia counties including all of the Atlanta metro. The maximum 24-hour rainfall total for September 20-21, 2009 was 21.03 inches in Douglas County. This extreme rainfall caused widespread flooding and damage to thousands of homes, businesses and vehicles. There was significant infrastructure damage across the region from this major flooding event including 20 river gages that went underwater and stopped reporting.			
<b>Colorado Hail Storm</b>	<i>Severe Storm</i>	\$1.0B (\$1.4B)	0 Deaths
July 2009: Severe hail impacts Colorado. Jefferson County was most affected with hail at least 8 inches deep. The hail damage from this storm was comparable to the July 11, 1990 Colorado hail storm.			
<b>Midwest, South and East Severe Weather</b>	<i>Severe Storm</i>	\$1.3B (\$1.9B)	0 Deaths
June 2009: Sustained outbreak of thunderstorms and high winds from a strong derecho event over the central, southern, and eastern states (TX, OK, MO, NE, KS, AR, AL, MS, TN, NC, SC, KY, PA).			
<b>Central Derecho and Tornadoes</b>	<i>Severe Storm</i>	(\$1.2B)*	7 Deaths
May 2009: More than 50 tornadoes and large hail from severe storms caused damage across many southeastern states (IL, KS, KY, MO, TN, TX).			
<b>South/Southeast Severe Weather and Tornadoes</b>	<i>Severe Storm</i>	\$1.4B (\$2.1B)	6 Deaths
April 2009: Outbreak of tornadoes, hail and severe thunderstorms over the south and southeastern states (AL, AR, GA, KY, MO, SC, TN) with 85 confirmed tornadoes.			
<b>Midwest/Southeast Tornadoes</b>	<i>Severe Storm</i>	\$1.6B (\$2.4B)	0 Deaths
March 2009: Outbreak of tornadoes over central and southern states (NE, KS, OK, IA, TX, LA, MS, AL, GA, TN, KY) with 56 tornadoes confirmed.			
<b>Southeast/Ohio Valley Severe Weather</b>	<i>Severe Storm</i>	\$1.7B (\$2.5B)	10 Deaths
February 2009: Complex of severe thunderstorms and high winds across the region (TN, KY, OK, OH, VA, WV, PA).			
<b>2008</b>	12 Events	\$64.4B (\$92.5B)	315 Deaths
<b>U.S. Drought</b>	<i>Drought</i>	\$7.0B (\$10.3B)	0 Deaths
2008: Severe drought and heat caused agricultural losses across a large portion of the U.S. Record low lake levels also occurred in areas of the southeast. The states impacted include AL, AR, CA, CO, GA, ID, IN, KS, KY, MD, MN, MS, MT, NC, ND, NJ, NM, OH, OK, OR, SC, TN, TX, UT, VA, WA and WI.			
<b>U.S. Wildfires</b>	<i>Wildfire</i>	\$1.2B (\$1.8B)	16 Deaths
Fall 2008: Drought conditions across numerous western, central and southeastern states (AK, AZ, CA, NM, ID, UT, MT, NV, OR, WA, CO, TX, OK, NC, FL ) resulted in thousands of wildfires; national acreage burned exceeding 5.2 million acres (mainly in the west) and over 1,000 homes and structures destroyed in California fires alone.			
<b>Hurricane Ike</b>	<i>Tropical Cyclone</i>	\$30.0B (\$42.6B)	112 Deaths
September 2008: Category 2 hurricane makes landfall in Texas, as the largest (in size) Atlantic hurricane on record, causing considerable storm surge in coastal TX and significant wind and flooding damage in TX, LA, AR, TN, IL, IN, KY, MO, OH, MI and PA. Severe gasoline shortages occurred in the southeast U.S. due to damaged oil platforms, storage tanks, pipelines and off-line refineries.			
<b>Hurricane Gustav</b>	<i>Tropical Cyclone</i>	\$6.0B (\$8.5B)	53 Deaths
September 2008: Category 2 hurricane makes landfall in Louisiana causing significant wind, storm surge, and flooding damage in AL, AR, LA, and MS.			
<b>Hurricane Dolly</b>	<i>Tropical Cyclone</i>	\$1.3B (\$1.8B)	3 Deaths



July 2008: Category 2 hurricane makes landfall in southern Texas causing considerable wind and flooding damage in TX and NM.

**Midwest Flooding** Flooding \$10.0B (\$14.6B) 24 Deaths

Summer 2008: Heavy rain and flooding caused significant agricultural loss and property damage in IA, IL, IN, MO, MN, NE, and WI with IA being hardest hit with widespread rainfall totals ranging from 4 to over 16 inches.

**Midwest/Mid-Atlantic Severe Weather** Severe Storm \$1.6B (\$2.3B) 18 Deaths

June 2008: An outbreak of tornadoes and thunderstorms over the Midwest/Mid-Atlantic states (IA, IL, IN, KS, NE, MI, MN, MO, OK, WI, MD, VA, WV).

**Midwest Tornadoes and Severe Weather** Severe Storm \$3.0B (\$4.3B) 13 Deaths

May 2008: Outbreak of tornadoes over the Midwest/Ohio Valley regions (IL, IN, IA, KS, MN, NE, OK, WY, CO) with 235 tornadoes confirmed.

**Southern Severe Weather** Severe Storm \$1.0B (\$1.5B) 2 Deaths

April 2008: Severe storms affect Arkansas, Oklahoma and Texas across the South.

**Southeast Tornadoes** Severe Storm \$1.1B (\$1.6B) 5 Deaths

March 2008: Tornadoes and severe weather across Georgia and South Carolina. This includes an EF-2 tornado causing damage to numerous buildings in downtown Atlanta.

**Southeast Tornadoes and Severe Weather** Severe Storm \$1.2B (\$1.8B) 57 Deaths

February 2008: Series of tornadoes and severe thunderstorms across the Southeast and Midwest states (AL, AR, IN, KY, MS, OH, TN, TX) with 87 tornadoes confirmed.

**Western, Central and Northeast Severe Weather** Severe Storm \$1.0B (\$1.4B) 12 Deaths

January 2008: Strong storm produces severe weather including hail, high winds and heavy precipitation from California to New York. Flash floods and landslides cause damage in California. In addition, more than 70 tornadoes were reported from Arkansas to Wisconsin, with the highest concentration of tornadoes in Missouri.

**2007** 5 Events \$12.1B (\$18.5B) 37 Deaths

**Western/Eastern Drought/Heat Wave** Drought \$3.5B (\$5.4B) 15 Deaths

Summer-Fall 2007: Severe drought with periods of extreme heat over most of the southeast and portions of the Great Plains, Ohio Valley, and Great Lakes area, resulting in major reductions in crop yields, along with very low stream-flows and lake levels. Includes states of ND, SD, NE, KS, OK, TX, MN, WI, IA, MO, AR, LA, MS, AL, GA, NC, SC, FL, TN, VA, WV, KY, IN, IL, OH, MI, PA, NY.

**Western Wildfires** Wildfire \$2.7B (\$4.1B) 12 Deaths

Summer 2007: Continued drought conditions and high winds over much of the western U.S. (AK, AZ, CA, ID, UT, MT, NV, OR, WA) resulting in numerous wildfires; with national acreage burned exceeding 8.9 million acres (mainly in the west) and over 3,000 homes and structures destroyed in southern California alone.

**East/South Severe Weather and Flooding** Severe Storm \$2.5B (\$3.8B) 9 Deaths

April 2007: Flooding, hail, tornadoes, and severe thunderstorms across numerous states (CT, DE, GA, LA, ME, MD, MA, MS, NH, NJ, NY, NC, PA, RI, SC, TX, VT, VA) in mid-April, including 3 "killer" tornadoes.

**Spring Freeze** Freeze \$2.0B (\$3.1B) 0 Deaths

April 2007: Widespread severe freeze over much of the east and midwest (AL, AR, GA, IA, IL, IN, KS, KY, MO, MS, NC, NE, OH, OK, SC, TN, VA, WV), causing significant losses in fruit crops, field crops (especially wheat), and the ornamental industry. Temperatures in the teens/20s accompanied by rather high winds nullified typical crop-protection systems.

**California Freeze** Freeze \$1.4B (\$2.1B) 1 Death

January 2007: Widespread agricultural freeze -- for nearly two weeks in January, overnight temperatures over a good portion of California dipped into the 20s, destroying numerous agricultural crops; with citrus, berry, and vegetable crops most affected.



<b>2006</b>	<i>8 Events</i>	<i>\$14.3B (\$24.9B)</i>	<i>97 Deaths</i>
<b>Numerous Wildfires</b>	<i>Wildfire</i>	<i>\$1.5B (\$2.3B)</i>	<i>28 Deaths</i>
2006: Numerous wildfires driven by dry weather and high winds burned over 9.8 million acres, across the western half of the country including Alaska. This is the second highest annual total behind the 10.1 million acres burned in 2015 since record-keeping began in 1960. The most affected states were AK, AZ, CA, CO, FL, ID, MT, NM, NV, OK, OR, TX, WA, WY			
<b>Central Severe Weather</b>	<i>Severe Storm</i>	<i>(\$1.4B)*</i>	<i>1 Death</i>
October 2006: Severe storms cause high wind and hail damage across numerous states including OH, IL, IN, MI, MN and WI.			
<b>Midwest/Plains/Southeast Drought</b>	<i>Drought</i>	<i>\$6.0B (\$9.4B)</i>	<i>0 Deaths</i>
Spring-Summer 2006: Rather severe drought affected crops especially during the spring-summer, centered over the Great Plains region with other areas affected across portions of the south -- including states of ND, SD, NE, KS, OK, TX, MN, IA, MO, AR, LA, MS, AL, GA, FL, MT, WY, CO, NM.			
<b>North Central Severe Weather and Tornadoes</b>	<i>Severe Storm</i>	<i>(\$1.2B)*</i>	<i>1 Death</i>
August 2006: Severe weather and tornadoes cause impacts across several north central states including Minnesota, Wisconsin, Indiana and Illinois.			
<b>Northeast Flooding</b>	<i>Flooding</i>	<i>\$1.5B (\$2.3B)</i>	<i>20 Deaths</i>
June 2006: Severe flooding over portions of the northeast due to several weeks of heavy rainfall, affecting the states of NY, PA, DE, MD, NJ, and VA.			
<b>Midwest Tornadoes</b>	<i>Severe Storm</i>	<i>\$2.4B (\$3.7B)</i>	<i>27 Deaths</i>
April 2006: Tornadoes and severe weather cause significant damage in the states of IA, IL, IN, and WI. The state of Indiana was most affected with over one billion dollars in damage.			
<b>Midwest/Southeast Tornadoes</b>	<i>Severe Storm</i>	<i>\$1.6B (\$2.5B)</i>	<i>10 Deaths</i>
April 6-8, 2006: Severe weather and numerous tornadoes affecting the states of OK, KS, MO, NE, KY, OH, TN, IN, MS, GA, and AL on April 6-8 with 3 "killer" tornadoes in TN.			
<b>Severe Storms and Tornadoes</b>	<i>Severe Storm</i>	<i>\$1.3B (\$2.1B)</i>	<i>10 Deaths</i>
March 2006: Outbreak of tornadoes over portions of the midwest and south during a week-long period-affecting the states of AL, AR, KY, MS, TN, TX, IN, KS, MO, and OK.			

<b>2005</b>	<i>6 Events</i>	<i>\$166.5B (\$263.8B)</i>	<i>2,002 Deaths</i>
<b>Hurricane Wilma</b>	<i>Tropical Cyclone</i>	<i>\$19.0B (\$29.6B)</i>	<i>35 Deaths</i>
October 2005: Category 3 hurricane hits SW Florida resulting in strong damaging winds and major flooding across southeastern Florida. Prior to landfall, Wilma as a Category 5 recorded the lowest pressure (882 mb) ever recorded in the Atlantic basin.			
<b>Hurricane Rita</b>	<i>Tropical Cyclone</i>	<i>\$18.5B (\$28.9B)</i>	<i>119 Deaths</i>
September 2005: Category 3 hurricane hits Texas-Louisiana border coastal region, creating significant storm surge and wind damage along the coast, and some inland flooding in the FL panhandle, AL, MS, LA, AR, and TX. Prior to landfall, Rita reached the third lowest pressure (897 mb) ever recorded in the Atlantic basin.			
<b>Midwest Drought</b>	<i>Drought</i>	<i>\$1.5B (\$2.4B)</i>	<i>0 Deaths</i>
Spring-Summer 2005: Rather severe localized drought causes significant crop losses (especially for corn and soybeans) in the states of AR, IL, IA, IN, MO, OH, and WI.			
<b>Hurricane Katrina</b>	<i>Tropical Cyclone</i>	<i>\$125.0B (\$197.5B)</i>	<i>1,833 Deaths</i>
August 2005: Category 3 hurricane initially impacts the U.S. as a Category 1 near Miami, FL, then as a strong Category 3 along the eastern LA-western MS coastlines, resulting in severe storm surge damage (maximum surge probably exceeded 30 feet) along the LA-MS-AL coasts, wind damage, and the failure of parts of the levee system in New Orleans. Inland effects included high winds and some flooding in the states of AL, MS, FL, TN, KY, IN, OH, and GA.			
<b>Hurricane Dennis</b>	<i>Tropical Cyclone</i>	<i>\$2.5B (\$4.0B)</i>	<i>15 Deaths</i>



July 2005: Category 3 hurricane makes landfall in western Florida panhandle resulting in storm surge and wind damage along the FL and AL coasts, along with scattered wind and flood damage in GA and MS.

**Southeast Severe Weather** *Severe Storm* (\$1.4B)\* 0 Deaths

March 2005: Severe storms cause widespread hail damage across numerous states including TX, AL, MS, GA, FL, NC and VA.

**2004** 6 Events \$54.8B (\$90.6B) 172 Deaths

**Hurricane Jeanne** *Tropical Cyclone* \$7.5B (\$12.2B) 28 Deaths

September 2004: Category 3 hurricane makes landfall in east-central Florida, causing considerable wind, storm surge, and flooding damage in FL, with some flood damage also in the states of GA, SC, NC, VA, MD, DE, NJ, PA, and NY. Puerto Rico also affected.

**Hurricane Ivan** *Tropical Cyclone* \$20.5B (\$33.4B) 57 Deaths

September 2004: Category 3 hurricane makes landfall on Gulf coast of Alabama, with significant wind, storm surge, and flooding damage in coastal AL and FL panhandle, along with wind/flood damage in the states of GA, MS, LA, SC, NC, VA, WV, MD, TN, KY, OH, DE, NJ, PA, and NY.

**Hurricane Frances** *Tropical Cyclone* \$9.8B (\$16.0B) 48 Deaths

September 2004: Category 2 hurricane makes landfall in east-central Florida, causing significant wind, storm surge, and flooding damage in FL, along with considerable flood damage in the states of GA, SC, NC, and NY due to 5-15 inch rains.

**Hurricane Charley** *Tropical Cyclone* \$16.0B (\$26.2B) 35 Deaths

August 2004: Category 4 hurricane makes landfall in southwest Florida, resulting in major wind and some storm surge damage in FL, along with some damage in the states of SC and NC.

**Colorado Hail Storms** *Severe Storm* (\$1.1B)\* 0 Deaths

June 2004: Several hailstorms across central and eastern Colorado cause widespread damage to many homes, businesses and vehicles.

**Severe Storms, Hail, Tornadoes** *Severe Storm* \$1.0B (\$1.7B) 4 Deaths

May 2004: Severe storms including tornadoes and hail cause damage across the Midwest, South, Southeast and Northeast regions. The states impacted include IA, IL, IN, KY, MI, MO, NC, NE, NY, OK, OH and WI.

**2003** 7 Events \$21.5B (\$37.9B) 180 Deaths

**California Wildfires** *Wildfire* \$3.9B (\$6.5B) 22 Deaths

Fall 2003: Dry weather, high winds, and resulting wildfires in Southern California burned over 3,700 homes. Nearly 4.0 million acres burned across numerous western states including Alaska.

**Western/Central Drought/Heat Wave** *Drought* \$5.0B (\$8.6B) 35 Deaths

Spring-Fall 2003: 2003 drought across western and central portions of the U.S. with losses to agriculture. The states most impacted include AZ, CO, IA, ID, IL, KS, MI, MN, MO, MT, ND, NE, NM, OR, SD, WA and WI.

**Hurricane Isabel** *Tropical Cyclone* \$5.5B (\$9.2B) 55 Deaths

September 2003: Category 2 hurricane makes landfall in eastern North Carolina, causing considerable storm surge damage along the coasts of NC, VA, and MD, with wind damage and some flooding due to 4-12 inch rains in NC, VA, MD, DE, WV, NJ, NY, and PA.

**Southern Derecho and Eastern Severe Weather** *Severe Storm* \$1.0B (\$1.7B) 7 Deaths

July 2003: Derecho across several southern states with the most focused damage across the Memphis, Tennessee metro area. Severe storms impact states across the South, Southeast, Midwest and Northeast regions including AR, AL, MS, GA, FL, SC, TN, KY, MI, NY, OH, PA and VT.

**Midwest/Plains Severe Weather** *Severe Storm* (\$1.5B)\* 7 Deaths

July 2003: Severe storms affect the states IA, IL, IN, MI, MN, OH, VA, WV across the Midwest and Plains.

**Severe Storms/Tornadoes** *Severe Storm* \$4.1B (\$7.0B) 51 Deaths



May 2003: Numerous tornadoes over the midwest, Mississippi valley, OH/TN valleys, and portions of the southeast, with a modern record one-week total of approximately 400 tornadoes reported

**Severe Storms/Hail** *Severe Storm* \$2.0B (\$3.4B) 3 Deaths

April 2003: Severe storms and large hail over the southern plains and lower MS valley, with Texas hardest hit, and much of the monetary losses due to hail.

**2002** 6 Events \$14.7B (\$26.8B) 63 Deaths

**Western Fire Season** *Wildfire* \$1.3B (\$2.3B) 21 Deaths

Fall 2002: Major wildfires over 11 western states from the Rockies to the west coast due to drought and periodic high winds, with over 7.1 million acres burned.

**U.S. Drought** *Drought* \$9.0B (\$15.8B) 0 Deaths

Spring-Fall 2002: Moderate to extreme drought over large portions of more than 30 states, including the western states, the Great Plains, and much of the eastern U.S.

**Eastern Tornadoes and Severe Storms** *Severe Storm* (\$1.2B)\* 28 Deaths

November 2002: Tornado outbreak of over 100 tornadoes across many eastern states causes widespread damage (AL, MS, GA, TN, KY, OH, PA). Tennessee and Ohio had the highest count of tornadoes.

**Tropical Storm Isidore** *Tropical Cyclone* \$1.2B (\$2.0B) 5 Deaths

September 2002: Tropical Storm Isidore caused heavy rain, flooding, tornadoes and coastal storm surge that impacted Louisiana, Mississippi, Alabama and Tennessee. Rainfall exceeded 15 inches across southern Louisiana with storm surge over 8 feet.

**Hurricane Lili** *Tropical Cyclone* \$1.1B (\$1.9B) 2 Deaths

October 2002: Category 1 hurricane makes landfall in Louisiana after causing damage across Saint Lucia, Jamaica, Haiti and Cuba.

**Severe Storms and Tornadoes** *Severe Storm* \$2.1B (\$3.6B) 7 Deaths

April 2002: Numerous tornadoes and widespread hail damage over the Central and Eastern states including NC, GA, VA, TX, AR, MO, MS, TN, IL, IN, KY, PA, MD, NY, OH, WV, and KS.

**2001** 3 Events \$11.6B (\$21.4B) 46 Deaths

**Tropical Storm Allison** *Tropical Cyclone* \$8.5B (\$14.8B) 43 Deaths

June 2001: The persistent remnants of Tropical Storm Allison produce rainfall amounts of 30-40 inches in portions of coastal Texas and Louisiana, causing severe flooding especially in the Houston area, then moves slowly northeastward; fatalities and significant damage reported in TX, LA, MS, FL, VA, and PA

**North Central Severe Weather** *Severe Storm* (\$1.2B)\* 0 Deaths

May 2001: Severe weather produced impacts across several north central states including Minnesota, Wisconsin, Iowa and Nebraska.

**Midwest/Ohio Valley Hail and Tornadoes** *Severe Storm* \$3.1B (\$5.4B) 3 Deaths

April 2001: Storms, tornadoes, and hail in the states of TX, OK, KS, NE, IA, MO, IL, IN, WI, MI, OH, KY, WV, and PA, over a 6-day period.

**2000** 5 Events \$6.1B (\$15.2B) 147 Deaths

**Western/Central/Southeast Drought/Heat Wave** *Drought* \$5.0B (\$9.2B) 140 Deaths

Spring-Fall 2000: Western/Central/Southeast Drought/Heat Wave. The states impacted include AZ, AL, AR, CA, CO, FL, GA, IA, KS, LA, MS, MT, NE, NM, OK, OR, SC, TN, and TX.

**South Florida Flooding** *Flooding* (\$1.6B)\* 3 Deaths



October 2000: Heavy rainfall up to 15 inches affected south Florida surrounding Miami that resulted in severe flooding that damaged thousands of homes and businesses. There was also several hundred million in damage done to agriculture.

**Western Fire Season** *Wildfire* \$1.1B (\$1.9B) 0 Deaths

Spring-Summer 2000: Severe wildfire season in the western states due to drought and frequent winds, with nearly 7 million acres burned.

**Southern Severe Weather** *Severe Storm* (\$1.2B)\* 0 Deaths

March 2000: Severe weather produced tornadoes, hail and high wind damage across Louisiana and Texas. The damage was most focused in northeastern Texas. These storms caused impacts to many homes, vehicles and businesses.

**Southeast Winter Storm** *Winter Storm* (\$1.3B)\* 4 Deaths

January 2000: Strong winter storm causes disruption and damage over numerous southeastern states (AL, GA, NC, SC, TN, LA, VA). Record amounts of snowfall occurred across central North Carolina, with snow totals in excess of 20 inches.

**1999** 5 Events \$12.0B (\$24.2B) 659 Deaths

**Hurricane Floyd** *Tropical Cyclone* \$6.5B (\$12.0B) 77 Deaths

September 1999: Large, category 2 hurricane makes landfall in eastern NC, causing 10-20 inch rains in 2 days, with severe flooding in NC and some flooding in SC, VA, MD, PA, NY, NJ, DE, RI, CT, MA, NH, and VT.

**Eastern Drought/Heat Wave** *Drought* \$2.5B (\$4.7B) 502 Deaths

Summer 1999: Very dry summer and high temperatures, mainly in eastern U.S., with extensive agricultural losses. The states impacted include AL, AR, FL, GA, KY, LA, MD, MS, NC, NJ, OH, SC, TN, VA, WV and PA.

**Oklahoma and Kansas Tornadoes** *Severe Storm* \$2.0B (\$3.8B) 55 Deaths

May 1999: Outbreak of F4-F5 tornadoes hit the states of Oklahoma and Kansas, along with Texas and Tennessee, Oklahoma City area hardest hit.

**Central and Eastern Winter Storm** *Winter Storm* (\$1.7B)\* 0 Deaths

Mid-January 1999: Winter storm affecting the Central and Eastern states including IL, IN, OH, MI, WV, VA, MD, PA, NJ, NY, MA, CT, VT, NH and ME.

**Central and Eastern Winter Storm** *Winter Storm* \$1.0B (\$2.0B) 25 Deaths

January 1999: South, Southeast, Midwest, Northeast affected by damaging winter storm

**1998** 11 Events \$18.1B (\$39.6B) 433 Deaths

**California Freeze** *Freeze* \$2.5B (\$4.8B) 0 Deaths

December 1998: A severe freeze damaged fruit and vegetable crops in the Central and Southern San Joaquin Valley. Extended intervals of sub 27°F; F temperatures occurred over an 8-day period.

**Texas Flooding** *Flooding* (\$1.8B)\* 31 Deaths

October 1998: Severe flooding in southeast Texas from 2 heavy rain events, with 10-20 inch rainfall totals

**Hurricane Georges** *Tropical Cyclone* \$6.0B (\$11.4B) 16 Deaths

September 1998: Category 2 hurricane strikes Puerto Rico, Virgin Islands, Florida Keys, and Gulf coasts of Louisiana, Mississippi, Alabama, and Florida panhandle, 15-30 inch 2-day rain totals in parts of Alabama and Florida

**Southern Drought and Heat Wave** *Drought* \$3.5B (\$6.8B) 200 Deaths

Summer 1998: Severe drought and heat wave from Texas/Oklahoma eastward to the Carolinas. The states impacted include AL, AR, FL, GA, LA, MS, NC, OK, SC, TN, TX, and VA.

**Hurricane Bonnie** *Tropical Cyclone* \$1.0B (\$1.9B) 3 Deaths

August 1998: Category 3 hurricane strikes eastern North Carolina and Virginia, extensive agricultural damage due to winds and



flooding, with 10-inch rains in 2 days in some locations.

**Tropical Storm Frances** *Tropical Cyclone* (\$1.3B)\* 2 Deaths

September 1998: Tropical Storm Frances caused extensive flooding in Texas and Louisiana. The rainfall totals from Frances were 10 to 20 inches across eastern Texas into southern Louisiana.

**Central and Eastern Severe Storms and Flooding** *Severe Storm* (\$1.7B)\* 12 Deaths

June 1998: Severe storms and flooding impact numerous Central and Eastern states. In particular, these storms and floods affected many residences and businesses throughout north-central and eastern Ohio. More than 7,000 homes were affected and more than 1,000 structures were completely destroyed or declared uninhabitable.

**Northern Plains and Great Lakes Derecho, Tornadoes** *Severe Storm* \$1.1B (\$2.2B) 20 Deaths

June 1998: Severe storms in late May through early June hit the Midwest, North, Northeast, and Southeast

**Minnesota Severe Storms/Hail** *Severe Storm* \$1.6B (\$3.1B) 1 Death

May 1998: Very damaging severe thunderstorms with large hail over wide areas of Minnesota

**Western/Eastern Severe Weather and Flooding** *Severe Storm* \$1.0B (\$1.9B) 132 Deaths

Winter-Spring 1998: Tornadoes and flooding cause damage across the West and Southeast. The states impacted include CA, TX, FL, AL, GA, LA, MS, NC and SC.

**Northeast Ice Storm** *Winter Storm* \$1.4B (\$2.7B) 16 Deaths

January 1998: Intense ice storm hits Maine, New Hampshire, Vermont, and New York, with extensive forestry losses

**1997** 3 Events \$7.7B (\$14.9B) 114 Deaths

**Northern Plains Flooding** *Flooding* \$3.7B (\$7.1B) 11 Deaths

Spring 1997: Severe flooding in North Dakota, South Dakota and Minnesota due to heavy spring snow melt. This flooding caused widespread damage to agriculture, infrastructure, homes and businesses.

**Mississippi and Ohio Valley Severe Weather and Flooding** *Severe Storm* \$1.0B (\$1.9B) 67 Deaths

March 1997: Tornadoes and severe flooding hit the states of AR, MO, MS, TN, IL, IN, KY, OH, and WV, with over 10 inches of rain in 24 hours in Louisville.

**West Coast Flooding** *Flooding* \$3.0B (\$5.9B) 36 Deaths

December 1996-January 1997: Torrential rains (10-40 inches in 2 weeks) and snowmelt produce severe flooding over portions of CA, WA, OR, ID, NV, and MT.

**1996** 5 Events \$10.8B (\$22.8B) 234 Deaths

**New England Flooding** *Flooding* (\$1.3B)\* 1 Death

October 1996: The flooding damaged homes, businesses, vehicles and other infrastructure. Factories and mills in Lawrence, Haverhill and Lowell, Massachusetts were severely impacted. A total of 81 bridges needed to be rebuilt after to flood on area lakes and rivers. Communities such as Ocean Park, Old Orchard Beach and Westbrook were severely flooded. Communities in southern Maine were also significantly damaged by floodwaters destroying homes, businesses and washing out roads, bridges and dams.

**Hurricane Fran** *Tropical Cyclone* \$5.0B (\$9.9B) 37 Deaths

September 1996: Category 3 hurricane strikes North Carolina and Virginia, over 10-inch 24-hour rains in some locations and extensive agricultural and other losses.

**Southern Plains Drought** *Drought* \$1.8B (\$3.6B) 0 Deaths

Spring-Summer 1996: Severe drought in agricultural regions of southern plains--Texas and Oklahoma most severely affected

**Pacific Northwest Severe Flooding** *Flooding* \$1.0B (\$2.0B) 9 Deaths

February 1996: Very heavy, persistent rains (10-30 inches) and melting snow over OR, WA, ID, and western MT.



**Blizzard/Floods** *Winter Storm* \$3.0B (\$6.0B) 187 Deaths

January 1996: Very heavy snowstorm (1-4 feet) over Appalachians, Mid-Atlantic, and Northeast; followed by severe flooding in parts of same area due to rain and snowmelt.

**1995** 7 Events \$15.8B (\$35.1B) 977 Deaths

**Hurricane Opal** *Tropical Cyclone* \$4.7B (\$9.5B) 27 Deaths

October 1995: Category 3 hurricane strikes Florida panhandle, Alabama, western Georgia, eastern Tennessee, and the western Carolinas, causing storm surge, wind, and flooding damage.

**Central, Southern and Northeast Drought/Heat Wave** *Drought* \$1.0B (\$2.0B) 872 Deaths

September 1995: Historic mid-July heat wave and urban heat island amplification caused hundreds of deaths across several major cities including Chicago, Milwaukee, and Philadelphia. Following the heat wave was hot, dry weather in July and August 1995 that affected crops in numerous states, as crops had not rooted well due to late planting from previous wet soils. This left crops vulnerable to a flash drought during a key portion of the growing season.

**Hurricane Marilyn** *Tropical Cyclone* \$2.1B (\$4.3B) 13 Deaths

September 1995: Category 2 hurricane impacts the U.S. Virgin Islands and Puerto Rico with maximum sustained winds of 110 mph.

**Hurricane Erin** *Tropical Cyclone* (\$1.7B)\* 6 Deaths

August 1995: Hurricane Erin impacted Florida as a category 1 hurricane. Most of the damage resulted from heavy rainfall and flooding in Florida, Alabama and Mississippi.

**South Plains Severe Weather** *Severe Storm* \$5.5B (\$11.2B) 32 Deaths

May 1995: Torrential rains, hail, and tornadoes across Texas-Oklahoma and southeast Louisiana-southern Mississippi, with Dallas and New Orleans areas (10-25 inch rains in 5 days) hardest hit.

**Texas Hail Storm** *Severe Storm* (\$1.2B)\* 0 Deaths

April 1995: Texas hail storms cause considerable impacts to many homes, vehicles and crops. These hail impacts were focused from Waco to Fort Worth.

**California Flooding** *Flooding* \$2.5B (\$5.2B) 27 Deaths

January-March 1995: Frequent winter storms cause 20-70 inch rainfall and periodic flooding across much of California

**1994** 6 Events \$7.0B (\$16.4B) 133 Deaths

**Western Fire Season** *Wildfire* (\$1.5B)\* 0 Deaths

Summer-Fall 1994: Severe wildfire season in the western states due to dry weather conditions. The states most impacted include CA, AZ, OR, WA, CO, UT, NV, NM and TX.

**Texas Flooding** *Flooding* \$1.0B (\$2.1B) 19 Deaths

October 1994: Torrential rain (10-25 inches in 5 days) and thunderstorms cause flooding across much of southeast Texas

**Tropical Storm Alberto** *Tropical Cyclone* \$1.0B (\$2.1B) 32 Deaths

July 1994: Remnants of slow-moving Alberto bring torrential 10-25 inch rains in 3 days, widespread flooding and agricultural damage in parts of Georgia, Alabama, and panhandle of Florida.

**Midwest/Plains Tornadoes** *Severe Storm* \$1.0B (\$2.1B) 3 Deaths

April 1994: Tornadoes and severe storms cause damage in states across the South, Southeast and Midwest. The states impacted include TX, OK, AR, CO, KS, NE, IA, SD, IL, IN, MN and MO.

**Southeast Ice Storm** *Winter Storm* \$3.0B (\$6.4B) 9 Deaths

February 1994: Intense ice storm with extensive damage in portions of TX, OK, AR, LA, MS, AL, TN, GA, SC, NC, and VA.

**Winter Storm, Cold Wave** *Winter Storm* \$1.0B (\$2.2B) 70 Deaths



January 1994: Winter storm affects the Southeast and Northeast regions. The states impacted include CT, DE, IL, IN, KY, MA, MD, ME, NC, NH, NJ, NY, OH, PA, RI, SC, TN, VA, VT and WV.

**1993** 5 Events      \$29.2B (\$64.7B)      339 Deaths

**California Wildfires** Wildfire      \$1.4B (\$2.9B)      4 Deaths

Fall 1993: Dry weather, high winds and wildfires in Southern California

**Southeast Drought and Heat Wave** Drought      \$1.3B (\$2.7B)      16 Deaths

Summer 1993: Drought and heat wave across Southeastern U.S. The states most impacted include AL, FL, GA, MD, NC, SC, TN, and VA.

**Midwest Flooding** Flooding      \$21.0B (\$45.7B)      48 Deaths

Summer 1993: Severe, widespread flooding in central U.S. due to persistent heavy rains and thunderstorms. There was extensive damage to agriculture, infrastructure, homes and businesses in many areas across several states. Many river stations also established new records for historical flood heights. This is the most costly non-tropical, inland flood event to affect the United States on record.

**Northern Plains and Ohio Valley Severe Weather** Severe Storm      (\$1.4B)\*      1 Death

July 1993: Severe storms caused high wind, hail and tornado damage across many Northern/Central Plains (NE, KS, MO, IA, MN, ND) and Ohio Valley states (IL, IN).

**East Coast Blizzard and Severe Weather** Winter Storm      \$5.5B (\$12.0B)      270 Deaths

March 1993: The "Storm of the Century" impacts the entire Eastern seaboard from Florida to Maine. This historic storm dumped 2-4 feet of snow and caused hurricane force winds across many Eastern and Northeastern states. This caused power outages to over 10 million households. Additional impacts included numerous tornadoes across Florida causing substantial damage. This was the most destructive and costly winter storm to affect the United States (since 1980), until it was surpassed by the February 2021 winter storm and cold wave.

**1992** 7 Events      \$33.6B (\$78.6B)      113 Deaths

**Northeast Winter Storm** Winter Storm      \$2.5B (\$5.4B)      19 Deaths

December 1992: Slow-moving winter storm batters northeast U.S. coast, with the New England region hardest hit. The states impacted include VA, MD, DE, PA, NJ, NY, CT, RI, MA and WV.

**Southeast Severe Weather** Severe Storm      (\$1.4B)\*      26 Deaths

November 1992: Three-day tornado outbreak strikes many Central and Eastern states including TX, LA, AL, MS, GA, AR, IN, OH, KY, TN, and NC. Major damage was reported across many areas, as more than 100 tornadoes were reported. This event remains one of the most prolific Fall season tornado outbreaks on record.

**Hurricane Iniki** Tropical Cyclone      \$3.1B (\$6.8B)      7 Deaths

September 1992: Category 4 hurricane causes severe damage to the Hawaiian island of Kauai. Hurricane Iniki is the costliest and deadliest hurricane to affect Hawaii since 1900.

**Hurricane Andrew** Tropical Cyclone      \$27.0B (\$59.4B)      61 Deaths

August 1992: Category 5 hurricane hits Florida and later impacts Louisiana as a category 3. High winds damage or destroy over 125,000 homes and leave at least 160,000 people temporarily homeless in Dade County, Florida alone. Initially rated as a category 4, Andrew was later upgraded to a category 5 upon further analysis. Andrew is one of four land falling category 5 hurricanes on record to affect the U.S. mainland in addition to Hurricane Camille (1969), the Labor Day Hurricane (1935) and Hurricane Michael (2018). Building codes in Florida were enhanced after Andrew to mitigate future hurricane wind damage.

**Severe Storms, Hail** Severe Storm      (\$1.7B)\*      0 Deaths

June 1992: Severe storms with hail hit Kansas and Oklahoma

**Hail, Tornadoes** Severe Storm      \$1.0B (\$2.1B)      0 Deaths

April 1992: Severe Storms hit Oklahoma and Texas with tornadoes and hail



<b>Severe Storms</b>	<i>Severe Storm</i>	(\$1.8B)*	0 Deaths
March 1992: Severe storms affect the South, Southeast. The states most impacted include Texas, Louisiana and Florida.			
<b>1991</b>	4 Events	\$7.8B (\$19.3B)	43 Deaths
<b>Oakland Firestorm</b>	<i>Wildfire</i>	\$3.3B (\$7.5B)	25 Deaths
October 1991: Oakland, California firestorm due to low humidity and high winds burned over 3,000 homes. This was the costliest urban wildfire to affect the United States since 1980 when it occurred.			
<b>U.S. Drought</b>	<i>Drought</i>	\$3.0B (\$6.9B)	0 Deaths
Spring-Summer 1991: Drought conditions over parts of the West, Central and eastern U.S. most affected the states IL, IN, KS, MN, OH, OR, PA, SD, and WA.			
<b>Hurricane Bob</b>	<i>Tropical Cyclone</i>	\$1.5B (\$3.4B)	18 Deaths
August 1991: Category 2 hurricane brushes the Outer Banks of North Carolina before making landfall in Rhode Island. Its impacts were felt from North Carolina to Long Island and into New England.			
<b>Severe Storms, Tornadoes</b>	<i>Severe Storm</i>	(\$1.5B)*	0 Deaths
March 1991: Severe storms hit the Midwest, Southeast, Northeast. The states impacted include KS, IL, MI, IN, MS, TN, KY, OH, AL, PA, NY, GA, SC and NC.			
<b>1990</b>	4 Events	\$4.4B (\$14.4B)	30 Deaths
<b>California Freeze</b>	<i>Freeze</i>	\$3.4B (\$8.3B)	0 Deaths
December 1990: Severe freeze in the Central and Southern San Joaquin Valley caused the loss of citrus, avocado trees, and other crops in many areas. Several days of subfreezing temperatures occurred, with some valley locations in the teens.			
<b>Western Fire Season</b>	<i>Wildfire</i>	(\$1.7B)*	17 Deaths
Summer 1990: Severe wildfire season in the western states due to drought and frequent winds, with more than 4.5 million acres burned nationally.			
<b>Colorado Hail Storm</b>	<i>Severe Storm</i>	(\$2.0B)*	0 Deaths
July 1990: Denver, CO (including airport) hit by severe hail storm. This was the costliest hail storm on record for Colorado when it occurred.			
<b>Southern Flooding</b>	<i>Flooding</i>	\$1.0B (\$2.4B)	13 Deaths
May 1990: Torrential rains cause flooding along the Trinity, Red, and Arkansas Rivers in TX, OK, LA, and AR			
<b>1989</b>	6 Events	\$14.0B (\$39.7B)	228 Deaths
<b>Winter Storm, Cold Wave</b>	<i>Winter Storm</i>	(\$1.7B)*	100 Deaths
December 1989: Winter storm and deep cold impacts the Northeast, South and Southeast. The states impacted include AL, AR, CT, FL, GA, IL, IN, KY, LA, ME, MO, MS, NC, NH, NY, OH, OK, PA, SC, TN, TX, VA, VT and WV.			
<b>Florida Freeze</b>	<i>Freeze</i>	\$2.0B (\$5.1B)	10 Deaths
December 1989: Severe freeze damages citrus crops across central/northern Florida.			
<b>Northern Plains Drought</b>	<i>Drought</i>	\$3.0B (\$7.7B)	0 Deaths
Summer-Fall 1989: Severe summer drought over much of the northern plains with significant losses to agriculture. The states impacted include CO, IA, IL, KS, MO, ND, NE, NV, SD, TX and UT.			
<b>Hurricane Hugo</b>	<i>Tropical Cyclone</i>	\$9.0B (\$22.3B)	86 Deaths
September 1989: Category 4 hurricane devastates South and North Carolina with ~20 foot storm surge and severe wind damage			



after hitting Puerto Rico and the U.S. Virgin Islands

**Tropical Storm Allison** *Tropical Cyclone* (\$1.5B)\* 11 Deaths

June 1989: Flooding from Tropical Storm Allison (1989) impacted Texas and Louisiana for days as Allison tracked inland. Most all of the damage was from flooding due to heavy rainfall with 20-25 inches in some locations. The slow progression of Allison also contributed to the increased rainfall totals.

**Southern Derecho and Severe Storms** *Severe Storm* (\$1.4B)\* 21 Deaths

May 1989: A derecho caused high wind damage across much of Texas into Louisiana. Severe storms cause damage in states across the South and Southeast. The states impacted include OK, TX, LA, MS, GA, SC, NC and VA.

**1988** 1 Event \$20.0B (\$53.6B) 454 Deaths

**U.S. Drought/Heat Wave** *Drought* \$20.0B (\$53.6B) 454 Deaths

Summer 1988: 1988 drought across a large portion of the U.S. with very severe losses to agriculture and related industries. Combined direct and indirect deaths (i.e., excess mortality) due to heat stress estimated at 5,000.

## 1987

No billion-dollar weather or climate disaster events were recorded for 1987.

**1986** 3 Events \$1.8B (\$7.7B) 123 Deaths

**Michigan Flooding** *Flooding* (\$1.1B)\* 10 Deaths

September 1986: Rainfall over a two-day period was 8 to 13 inches. Across Central Lower Michigan, 22 counties were declared disaster areas. Thousands of homes suffered first floor or basement damage throughout Michigan. More than 3,600 miles of roadways were impassable as the result of the failure of four primary road bridges and hundreds of secondary road bridges and culverts. A total of 14 dams were undermined. Thousands of acres of crops including sugar beets, beans, potatoes, corn, and other vegetables were ruined.

**Southeast Drought/Heat Wave** *Drought* \$1.8B (\$5.1B) 100 Deaths

Summer 1986: Severe summer drought in parts of the southeastern U.S. with severe losses to agriculture. The states impacted include AL, AR, GA, LA, MS, NC, SC, TN and VA.

**Western Severe Storms and Flooding** *Severe Storm* (\$1.5B)\* 13 Deaths

February 1986: Severe storms and flooding affect the states CA, CO, NV, OR, WY across the West.

**1985** 7 Events \$5.4B (\$22.2B) 379 Deaths

**Virginia, West Virginia, Pennsylvania and Maryland Flooding** *Flooding* \$1.4B (\$4.0B) 62 Deaths

November 1985: Historic flooding damaged or destroyed over 10,000 homes and businesses across West Virginia and Virginia. Rainfall exceeded 19 inches, which forced the Roanoke and James Rivers, among others, to record levels. The damage in Virginia was most severe in the towns of Roanoke and Richmond. In Pennsylvania, floods also damaged or destroyed several thousand homes. Maryland experienced severe but more isolated flooding and damage.

**Hurricane Juan** *Tropical Cyclone* \$1.5B (\$4.3B) 63 Deaths

October 1985: Category 1 hurricane makes landfall near Morgan City, Louisiana. Hurricane Juan's slow movement causes severe flooding in Louisiana, Mississippi, Alabama and Florida. Southern Louisiana was most severely affected due to widespread rainfall of 10-15 inches that caused substantial flooding.

**Hurricane Gloria** *Tropical Cyclone* (\$2.5B)\* 11 Deaths

September 1985: Category 2 hurricane makes several landfalls along the eastern seaboard, affecting states from North Carolina to Maine.

**Hurricane Elena** *Tropical Cyclone* \$1.3B (\$3.7B) 4 Deaths



September 1985: Category 3 hurricane approaches the Florida Panhandle prior to landfall near Biloxi, Mississippi. Considerable wind and rain impacts were felt from Florida to Louisiana.

<b>Ohio and Pennsylvania Tornado Outbreak</b>	<i>Severe Storm</i>	(\$1.7B)*	89 Deaths
---	---------------------	-----------	-----------

June 1985: Historic tornado outbreak caused widespread damage across eastern Ohio, western Pennsylvania into New York and Canada. Dozens of tornadoes caused widespread destruction to many homes, businesses, farms and infrastructure. 89 people also lost their lives, which made this tornado outbreak the most deadly across the U.S. during the 1980s. There were also more than 1,000 reports of injury.

<b>Florida Freeze</b>	<i>Freeze</i>	\$1.2B (\$3.5B)	0 Deaths
-----------------------	---------------	-----------------	----------

January 1985: Severe freeze over central/northern Florida damages citrus crops.

<b>Winter Storm, Cold Wave</b>	<i>Winter Storm</i>	(\$2.5B)*	150 Deaths
--------------------------------	---------------------	-----------	------------

January 1985: Extreme cold and winter storms in the Southeast, South, Southwest, Northeast, Midwest, and North

<b>1984</b>	<i>2 Events</i>	(\$3.1B)	81 Deaths
-------------	-----------------	----------	-----------

<b>Severe Storms and Hail</b>	<i>Severe Storm</i>	(\$1.3B)*	1 Death
-------------------------------	---------------------	-----------	---------

June 1984: Severe storms and hail impact Colorado, South Dakota and Nebraska.

<b>Tornadoes, Severe Storms, Floods</b>	<i>Severe Storm</i>	(\$1.8B)*	80 Deaths
---	---------------------	-----------	-----------

Spring 1984: States in the Southeast and Northeast regions are impacted by tornadoes, severe storms, and flooding. The states impacted include GA, FL, SC, NC, VA, MD, DE, NJ, NY, PA, CT, MA and RI.

<b>1983</b>	<i>6 Events</i>	\$11.0B (\$36.0B)	281 Deaths
-------------	-----------------	-------------------	------------

<b>Freeze / Cold Wave</b>	<i>Freeze</i>	\$2.0B (\$6.4B)	151 Deaths
---------------------------	---------------	-----------------	------------

December 1983: Severe freeze damages citrus crops across central/northern Florida. Associated cold wave over much of the U.S. causes over 100 deaths and additional damages.

<b>Arizona Flooding</b>	<i>Flooding</i>	(\$1.2B)*	14 Deaths
-------------------------	-----------------	-----------	-----------

October 1983: Throughout the state, excessive rainfall caused many rivers to overflow. After the rain ended the Santa Cruz, Rillito and Gila rivers experienced their highest crests on record. Five towns including Clifton, Duncun, Winkelman, Hayden and Marana were almost completely flooded. In Marana many homes were submerged forcing residents to be evacuated. Over 700 homes were destroyed in Clifton. In addition, 86 of the town's 126 businesses were heavily damaged due to the flooding. Around 3,000 buildings were destroyed due to this flooding.

<b>Southeast Drought</b>	<i>Drought</i>	\$3.0B (\$9.4B)	0 Deaths
--------------------------	----------------	-----------------	----------

Summer 1983: 1983 flash drought in the southeastern U.S. with losses to agriculture, most notably corn and soybeans. The states impacted include AL, AR, GA, KY, LA, MO, MS, NC, SC, TN and VA.

<b>Hurricane Alicia</b>	<i>Tropical Cyclone</i>	\$3.0B (\$9.3B)	21 Deaths
-------------------------	-------------------------	-----------------	-----------

August 1983: Category 3 hurricane makes landfall near Galveston, Texas with maximum sustained winds 115 mph. Hurricane Alicia was the first hurricane to hit the United States mainland since Hurricane Allen in August 1980.

<b>Western Storms and Flooding</b>	<i>Flooding</i>	\$1.5B (\$4.8B)	50 Deaths
------------------------------------	-----------------	-----------------	-----------

December 1982-March 1983: Severe storms and flooding, especially in the states of WA, OR, CA, AZ, NV, ID, UT, and MT

<b>Gulf States Storms and Flooding</b>	<i>Flooding</i>	\$1.5B (\$4.9B)	45 Deaths
--	-----------------	-----------------	-----------

December 1982-January 1983: Severe storms and flooding, especially in the states of TX, AR, LA, MS, AL, GA, and FL

<b>1982</b>	<i>3 Events</i>	(\$5.4B)	148 Deaths
-------------	-----------------	----------	------------

<b>Severe Storms</b>	<i>Severe Storm</i>	(\$1.6B)*	30 Deaths
----------------------	---------------------	-----------	-----------



June 1982: Severe storms cause damage across the South, Southeast and Central regions. The states impacted include AR, IL, KY, IN, SC, GA and OH.

<b>Midwest/Plains/Southeast Tornadoes</b>	<i>Severe Storm</i>	(\$1.6B)*	33 Deaths
---	---------------------	-----------	-----------

April 1982: Tornadoes and severe weather affect the states (AL, AR, CO, IA, IL, IN, KS, KY, LA, MI, MN, MO, MS, NE, OH, OK, PA, TN, TX, WI, WV) across the Midwest, Plains and Southeast.

<b>Midwest/Southeast/Northeast Winter Storm, Cold Wave</b>	<i>Winter Storm</i>	(\$2.2B)*	85 Deaths
--	---------------------	-----------	-----------

January 1982: Winter storm and cold wave affect numerous states (AL, AR, CT, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, ND, NH, NJ, NY, OH, OK, PA, RI, SC, TN, TX, VA, VT, WI, WV) across the Midwest, Southeast and Northeast.

<b>1981</b>	<i>2 Events</i>	(\$3.4B)	20 Deaths
-------------	-----------------	----------	-----------

<b>Severe Storms, Flash Floods, Hail, Tornadoes</b>	<i>Severe Storm</i>	(\$1.4B)*	20 Deaths
---	---------------------	-----------	-----------

May 1981: Severe storms cause damage across the Midwest and South. The states most impacted include TX, OK, KS, AL and LA.

<b>Florida Freeze</b>	<i>Freeze</i>	(\$2.0B)*	0 Deaths
-----------------------	---------------	-----------	----------

January 1981: Severe freeze heavily damaged fruit crops across Florida. Over 25,000 Florida farms were impacted and sustained losses.

<b>1980</b>	<i>3 Events</i>	\$10.0B (\$44.9B)	1,280 Deaths
-------------	-----------------	-------------------	--------------

<b>Central/Eastern Drought/Heat Wave</b>	<i>Drought</i>	\$10.0B (\$40.0B)	1,260 Deaths
--	----------------	-------------------	--------------

Summer-Fall 1980: Central and eastern U.S. drought/heat wave caused damage to agriculture and other related industries. Combined direct and indirect deaths (i.e., excess mortality) due to heat stress estimated at 10,000.

<b>Hurricane Allen</b>	<i>Tropical Cyclone</i>	(\$2.2B)*	13 Deaths
------------------------	-------------------------	-----------	-----------

August 1980: Category 3 hurricane makes landfall north of Brownsville, Texas with maximum sustained winds of 115 mph. Hurricane Allen causes rainfall up to 20 inches in southern Texas and storm surge as high as 12 feet along the coast.

<b>Southern Severe Storms and Flooding</b>	<i>Flooding</i>	(\$2.7B)*	7 Deaths
--	-----------------	-----------	----------

April 1980: Severe storms and flooding affect several states (AR, LA, MS) across the South.

\*Exceeds one-billion dollar threshold after 2024 Consumer Price Index adjustment

**Caveat for economic loss estimates:**

These statistics were taken from a wide variety of sources and represent, to the best of our ability, the estimated total costs of these events -- that is, the costs in terms of dollars that would not have been incurred had the event not taken place. Insured and uninsured losses are included in damage estimates. These estimates are likely to change as damage assessments become more complete. Estimates are periodically updated as more data/information become available. Sources include the National Weather Service, the Federal Emergency Management Agency, US Department of Agriculture, other U.S. government agencies, individual state emergency management agencies, state and regional climate centers, media reports, and insurance industry estimates including Property Claim Services and Munich Re. This report is also available at <https://www.ncei.noaa.gov/access/billions/events> and includes links to detailed technical reports on many of these events.

A research article "U.S. Billion-dollar Weather and Climate Disasters: Data Sources, Trends, Accuracy and Biases" (Smith and Katz, 2013) regarding the loss data we use, our methods and any potential bias was published in 2013. This was followed by the research article "Quantifying Uncertainty and Variable Sensitivity within the U.S. Billion-dollar Weather and Climate Disaster Cost Estimates" (Smith and Matthews, 2015) as a next step to enhance the value and usability of estimated disaster costs given data limitations and inherent complexities.

**Authors: Adam Smith, Neal Lott, Tom Ross**

